

Failover Switching Tests Between Two RF Communications Links

David Brooks
Infinite Global Infrastructures, West Chicago, Illinois

Brian Frantz
Verizon Federal Network Systems, LLC, Arlington, Virginia

Doug Hoder
Glenn Research Center, Cleveland

Ryan Wilkins
Infinite Global Infrastructures, West Chicago, Illinois

The NASA STI Program Office . . . in Profile

Since its founding, NASA has been dedicated to the advancement of aeronautics and space science. The NASA Scientific and Technical Information (STI) Program Office plays a key part in helping NASA maintain this important role.

The NASA STI Program Office is operated by Langley Research Center, the Lead Center for NASA's scientific and technical information. The NASA STI Program Office provides access to the NASA STI Database, the largest collection of aeronautical and space science STI in the world. The Program Office is also NASA's institutional mechanism for disseminating the results of its research and development activities. These results are published by NASA in the NASA STI Report Series, which includes the following report types:

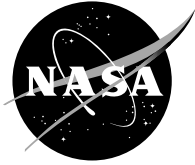
- **TECHNICAL PUBLICATION.** Reports of completed research or a major significant phase of research that present the results of NASA programs and include extensive data or theoretical analysis. Includes compilations of significant scientific and technical data and information deemed to be of continuing reference value. NASA's counterpart of peer-reviewed formal professional papers but has less stringent limitations on manuscript length and extent of graphic presentations.
- **TECHNICAL MEMORANDUM.** Scientific and technical findings that are preliminary or of specialized interest, e.g., quick release reports, working papers, and bibliographies that contain minimal annotation. Does not contain extensive analysis.
- **CONTRACTOR REPORT.** Scientific and technical findings by NASA-sponsored contractors and grantees.

- **CONFERENCE PUBLICATION.** Collected papers from scientific and technical conferences, symposia, seminars, or other meetings sponsored or cosponsored by NASA.
- **SPECIAL PUBLICATION.** Scientific, technical, or historical information from NASA programs, projects, and missions, often concerned with subjects having substantial public interest.
- **TECHNICAL TRANSLATION.** English-language translations of foreign scientific and technical material pertinent to NASA's mission.

Specialized services that complement the STI Program Office's diverse offerings include creating custom thesauri, building customized databases, organizing and publishing research results . . . even providing videos.

For more information about the NASA STI Program Office, see the following:

- Access the NASA STI Program Home Page at **<http://www.sti.nasa.gov>**
- E-mail your question via the Internet to help@sti.nasa.gov
- Fax your question to the NASA Access Help Desk at 301-621-0134
- Telephone the NASA Access Help Desk at 301-621-0390
- Write to:
NASA Access Help Desk
NASA Center for Aerospace Information
7121 Standard Drive
Hanover, MD 21076



Failover Switching Tests Between Two RF Communications Links

David Brooks
Infinite Global Infrastructures, West Chicago, Illinois

Brian Frantz
Verizon Federal Network Systems, LLC, Arlington, Virginia

Doug Hoder
Glenn Research Center, Cleveland

Ryan Wilkins
Infinite Global Infrastructures, West Chicago, Illinois

National Aeronautics and
Space Administration

Glenn Research Center

Trade names or manufacturers' names are used in this report for identification only. This usage does not constitute an official endorsement, either expressed or implied, by the National Aeronautics and Space Administration.

Available from

NASA Center for Aerospace Information
7121 Standard Drive
Hanover, MD 21076

National Technical Information Service
5285 Port Royal Road
Springfield, VA 22100

Available electronically at <http://gltrs.grc.nasa.gov>

Failover Switching Tests Between Two RF Communications Links

David Brooks
Infinite Global Infrastructures
West Chicago, Illinois 60185

Brian Frantz
Verizon Federal Network Systems, LLC
Arlington, Virginia 22209-3801

Doug Hoder
National Aeronautics and Space Administration
Glenn Research Center
Cleveland, Ohio 44135

Ryan Wilkins
Infinite Global Infrastructures
West Chicago, Illinois 60185

This work presents a short report on the routing tests of the Ku band satcom and VHF line-of-sight communications systems on the Advanced Air Transportation Technologies (AATT) Aero/Mobile van.

The first section is a description of the equipment used, followed by descriptions of the tests, the theoretical results, and finally, conclusions and the actual data.

Background:

Future aeronautical communications systems will probably rely on more than one physical communications link for all traffic. Various radio systems such as HF, VHF, L-band satcom and even Ku-band satcom have all been demonstrated and used before. These tests were an attempt to demonstrate the feasibility to route traffic through two communications links with very different physical characteristics. Both Ku-band satcom (through a geosynchronous satellite) and VHF line-of-sight systems were used both individually (as a baseline) and in mixed configurations (transmit on one link, receive on the other).

Also, failover tests were performed, wherein one link is deliberately shutdown, and the session is dynamically transferred to the other link.

Equipment Descriptions:

Satcom System

The satcom subsystem of the mobile satcom/VHF terminal used commercial Ku-band satellites and provided full duplex connectivity to a fixed station (located at NASA Glenn). The airborne (or mobile) host computers were connected into the Glenn network, and appear as local machines.

The aeronautical terminal design was based around earlier fixed and shipboard reflector antenna terminals built at NASA Glenn, but incorporated a set of electronically-steered receive and transmit phased-array antennas (PAAs). These were purchased from the Boeing Company.

The PAAs are normally configured for frequency, polarization and longitude of the satellite to be used. The antenna control system takes the position data and platform attitude data and calculates the correct pointing angle for both the transmit and receive arrays. The platform position and attitude data are derived from an ARINC 429 interface from the laser gyro/GPS system on the van, or directly from an aircraft INS (*inertial navigation system*) system (on a ARINC 429-equipped aircraft).

Unfortunately, there was some major problems with the phased-array antenna system, and we were forced to conduct the tests using a small (90 cm) fixed reflector antenna system. The performance of the fixed antenna system was comparable to the phased array system.

At the *mobile* side of the system (the aero-mobile van), the received downlink RF signal was downconverted and directed to a commercial satellite modem (Comstream CM701) for demodulation. The demodulated data stream was then routed to a Cisco router, which served as a gateway for hosts connected to the terminal.

Similarly, the uplink data stream from airborne hosts was routed through the Cisco router to a semi-custom spread spectrum modem (based on an L3 EB200 development system), into an upconverter and then through the transmit antenna.

The spread spectrum modulation was used on the airborne uplink to mitigate adjacent satellite interference due to the wide beamwidth of the transmit array.

The *fixed* (ground) side of the system consisted of a complimentary terminal located at NASA Glenn. Since the fixed station used an 8 m antenna, there was no need for the spread-spectrum modulation, and the roles of the two modems (the Comstream CM701 and the L3 EB200) were reversed, i.e., the data stream *from* the mobile station was received by the EB200, and the CM701 was used to source data *to* the mobile terminal.

VHF System

The VHF subsystem consisted of a pair of commercial VHF packet modems (Teledesign TS4000 VHF data radio).

The Teledesign system was configured for full-duplex operation. Each side of the system consisted of two radios; one used as a receiver (demodulator) with the other used as a transmitter (modulator). On the mobile side, the modem RF ports were connected to a TX/RX Systems duplexer, and from there to a Comtelco VHF antenna mounted on the roof of the AATT aero-mobile communications Van. The fixed side utilized the same system design with the exception that the duplexer was connected to an omnidirectional antenna at a height of about 9 m. Transmit power levels on both sides were set at 34 dBm. RF Data rates were set to 19.2 kb/s.

The mobile and fixed stations each had a single Cisco 3640 router. The two routers were connected via independent satcom and VHF data paths. The routers function was to route packets from the source host onto the selected data path to the destination host. The data path was selected based on weighted routing tables. The primary data path was the route with the lowest cost.

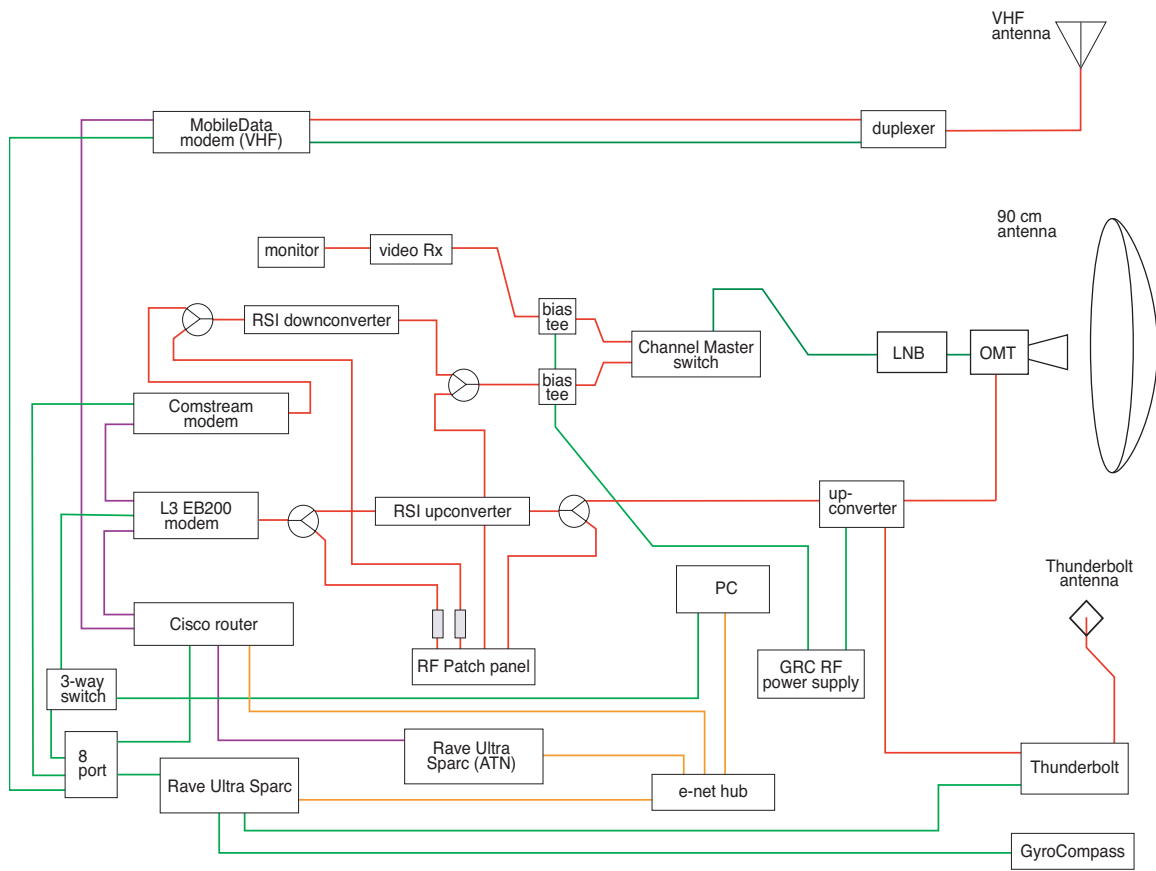


Figure 1: Block diagram of mobile Satcom/VHF terminal

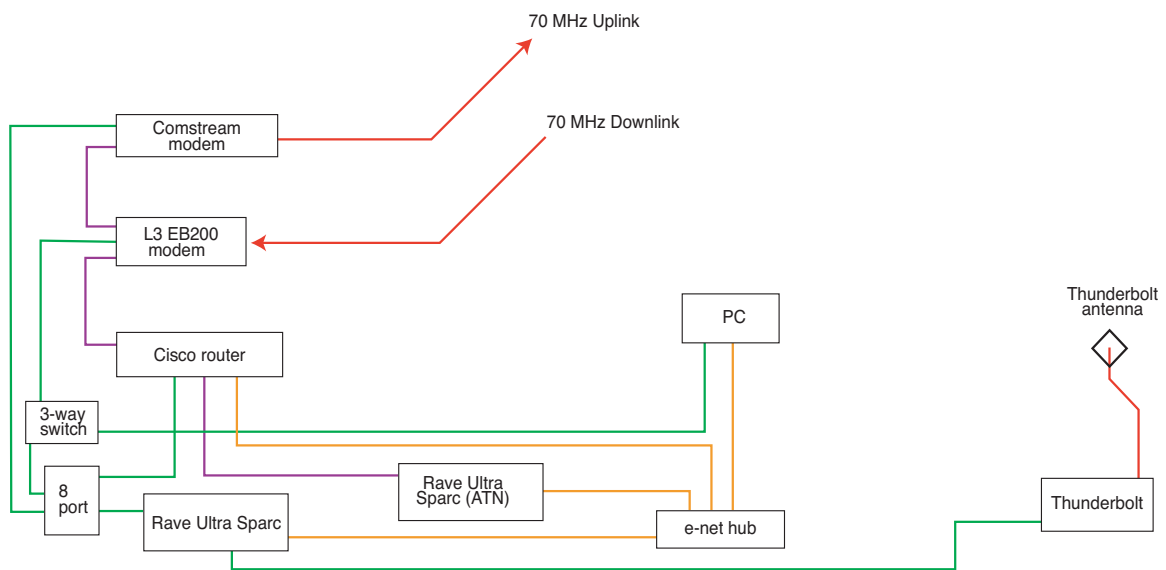


Figure 2: Block diagram of fixed Satcom/VHF terminal

General Performance Parameters

The general performance parameters of the terminal are:

Ku-band uplink

frequency: 14.0 - 14.5 GHz

number of elements in the Tx array: 254

EIRP: 36 dBW

modulation: QPSK with direct-sequence spread spectrum, up to 512 kb/s

error-correcting coding: 1/2 rate convolutional

spreading: to 10 MHz

Ku-band downlink

frequency: 11.75 - 12.25 GHz

number of elements in the Rx array: 1536

G/T: 34 dB/K

modulation: QPSK, up to 4 Mb/s

error-correcting coding: 1/2 rate convolutional, rate 235/255 Reed-Solomon

VHF datalink

frequency: 139.110 and 141.965 MHz

data rate: 19.2 kb/s (nominal)

modulation: GMSK

output power: approximately 4 dBW

no error-correcting coding

Test Descriptions:

The goal of these tests was to attempt to measure the actual data throughput on each set of connections, and to demonstrate the ability of the system to “failover” (“hot switch”) from a primary to a secondary link.

The *iperf* tool was used to measure the instantaneous throughput rate, but this application does have some problems. Unfortunately, it is still probably the best available tool for this purpose.

The testing consisted of two parts:

- (1) a standard set of IP tests with fixed routing, and
- (2) *iperf* testing with failover between the satcom and VHF links

The standard test set consists of:

- (a) pings (b) *ttcp*, and (c) *iperf*.

ping

A “ping” is an ICMP (Internet Control Message Protocol) packet of variable length sent from one host to another and then sent back to the originator of the ping. The existence of, and round trip time of the acknowledgment are reported.

“pings” of length 64, 512, 1024, 2048, and 4096 bytes were sent between the fixed and mobile hosts.

More information about “ping” can be found at <<http://www.faqs.org/rfcs/rfc792.html>>.

TTCP

TTCP is a performance measurement tool for TCP links. It provides a measurement of user data throughput rate—which can be highly dependent upon the delay*bandwidth product. With the long geosynchronous satellite delay, this becomes an issue.

More information can be found at
<<http://www.nas.nasa.gov/Groups/LAN/ClassNotes/ant/ttcp.html>>.

Iperf

Iperf is a network performance measurement tool similar to *ttcp*. It is used to measure maximum TCP bandwidth, allowing the tuning of various parameters and UDP characteristics. *Iperf* reports bandwidth, delay jitter, datagram loss.

Iperf was written as a modern replacement for older tried and true tools, such as *ttcp*, but with options to support more recent network features and enhancements.

More information can be found at <<http://dast.nlanr.net/Projects/Iperf/>>.

Routing configurations

There are four routing configurations tested:

	<i>fixed-to-mobile link</i>	<i>mobile-to-fixed link</i>
(1)	satcom	satcom
(2)	VHF	VHF
(3)	satcom	VHF
(4)	VHF	satcom

There are actually sixteen log files from the four configurations. For each test session we logged both receive and transmit data. Each test was run primarily in one direction which required us to run two tests for each direction of a given routing configuration. Each test then generated two logs, one for transmit, and one for receive.

The log files are attached (*Appendix B*) and are labeled as follows:

<month>_<day>_<site>_<local-uplink>_<remote-uplink>_<test-direction>

month: Three letter abbreviation of the month the test was run.

day: Two numbers denoting the day the test was run.

site: Fixed (fxd), or Mobile (mob)

local-uplink: Satcom (sat), or VHF (vhf)

remote-uplink: Satcom (sat), or VHF (vhf)

test-direction: Data sample of the Receive (rx) or Transmit (tx) side of the local interface.

“*feb_05_fxd_sat_sat_rx*” would imply a test run on February 5th, at the Fixed station, with Fixed station satellite uplink paired with Mobile station satellite downlink, Mobile station satellite uplink paired with Fixed station satellite downlink, and logging data on the receive side of the fixed station.

The tests were performed over a period from February 5 through February 26, 2003.

IP Test Results

All links functioned normally. The throughput rates are similar to those calculated in Appendix A. Results are summarized below in Table 1.

Table 1: Summary of Throughput for Static Links

configuration 1:

link segment:	fixed-to-mobile	mobile-to-fixed
physical link:	satcom	satcom
ttcp throughput ¹ :	1780	230
iperf throughput ² :	1900	243
log files:	<i>feb_05_mob_sat_sat_rx</i> <i>feb_05_fxd_sat_sat_tx</i>	<i>feb_05_fxd_sat_sat_rx</i> <i>feb_05_mob_sat_sat_tx</i>

configuration 2:

link segment:	fixed-to-mobile	mobile-to-fixed
physical link:	VHF	VHF
ttcp throughput ¹ :	10	10
iperf throughput ² :	14.8	14.8
log files:	<i>feb_05_mob_vhf_vhf_rx</i> <i>feb_05_fxd_vhf_vhf_tx</i>	<i>feb_05_fxd_vhf_vhf_rx</i> <i>feb_05_mob_vhf_vhf_tx</i>

configuration 3:

link segment:	fixed-to-mobile	mobile-to-fixed
physical link:	satcom	VHF
ttcp throughput ¹ :	940	10
iperf throughput ² :	1250	14.6
log files:	<i>feb_05_mob_vhf_sat_rx</i> <i>feb_05_fxd_sat_vhf_tx</i>	<i>feb_05_fxd_sat_vhf_rx</i> <i>feb_05_mob_vhf_sat_tx</i>

configuration 4:

link segment:	fixed-to-mobile	mobile-to-fixed
physical link:	VHF	satcom
ttcp throughput ¹ :	10	240
iperf throughput ² :	14.6	235
log files:	<i>feb_05_mob_sat_vhf_rx</i> <i>feb_05_fxd_vhf_sat_tx</i>	<i>feb_05_fxd_vhf_sat_rx</i> <i>feb_05_mob_sat_vhf_tx</i>

¹--average throughput, in kb/s

²--average instantaneous throughput, in kb/s

Failover Tests

These tests were designed to demonstrate the simultaneous use of more than one physical link. In this case these were the satcom link and the VHF link. These two links had very different characteristics—the satcom link had a very wide bandwidth (256 to 2048 kb/s) and a long delay (about 250 msec for each direction). The VHF link was line-of-sight, with extremely short delay, and narrow bandwidth (only about 19.2 kb/s).

The router was configured to utilize either the satcom or the VHF link as primary, with the other as secondary. The primary link was interrupted, and traffic was re-routed through the secondary link. An *iperf* session was run during the test to observe the results.

Failover Test Results

The failover tests consisted of running the system through the satcom link for several minutes, shutting down the satcom link, and letting the system reconnect through the VHF system. After the VHF connection settled, we shut it down and then let the system reconnect through the satcom system. The *iperf* tool was used to measure the instantaneous throughput.

The initial throughput rate was measured at about 1900 kb/s. After the failover from satcom to VHF, the data rate settled out at about 14.8 kb/s. After failover back to the satcom system, the TCP slow-start could be observed, with the throughput rate climbing from 14.8 back to 1900 kb/s over a period of about 100 seconds.

Two test were performed. The data from each set is displayed in the graphs which follow. The log files containing this data are:

feb_26_mob_sat_sat_rx_failover.4 and *feb_26_mob_sat_sat_rx_failover.5*

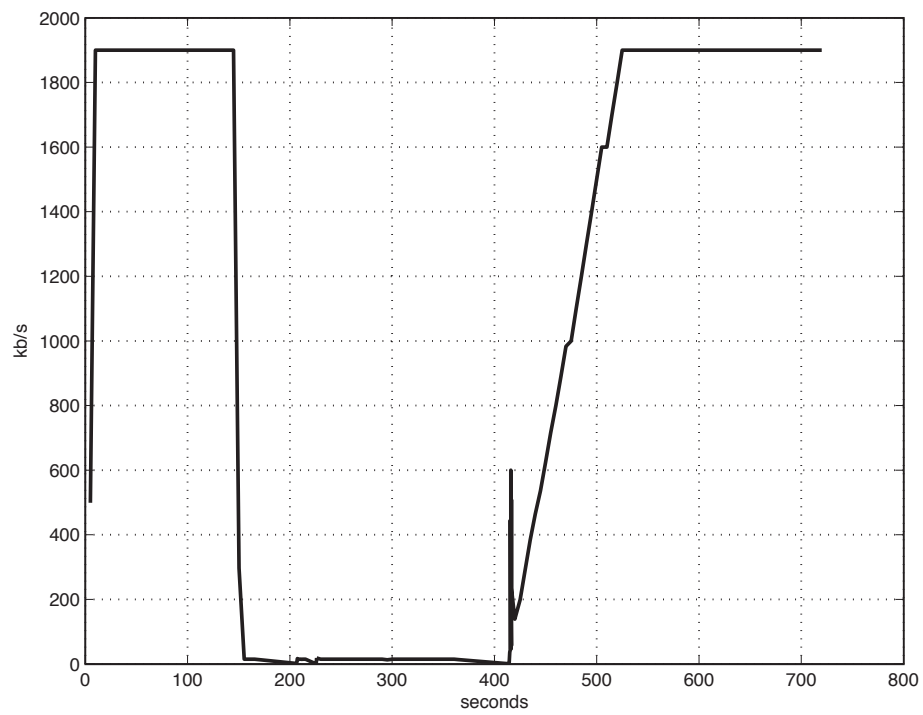


Figure 3: Failover test results (data set #1)

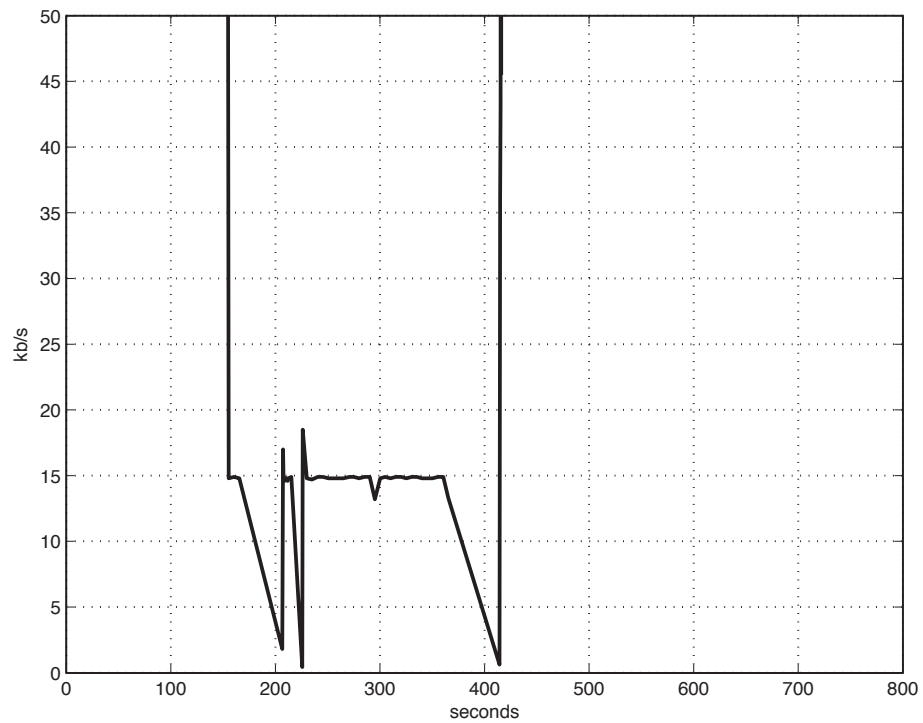


Figure 4: **Detail** of failover test results (data set #1)

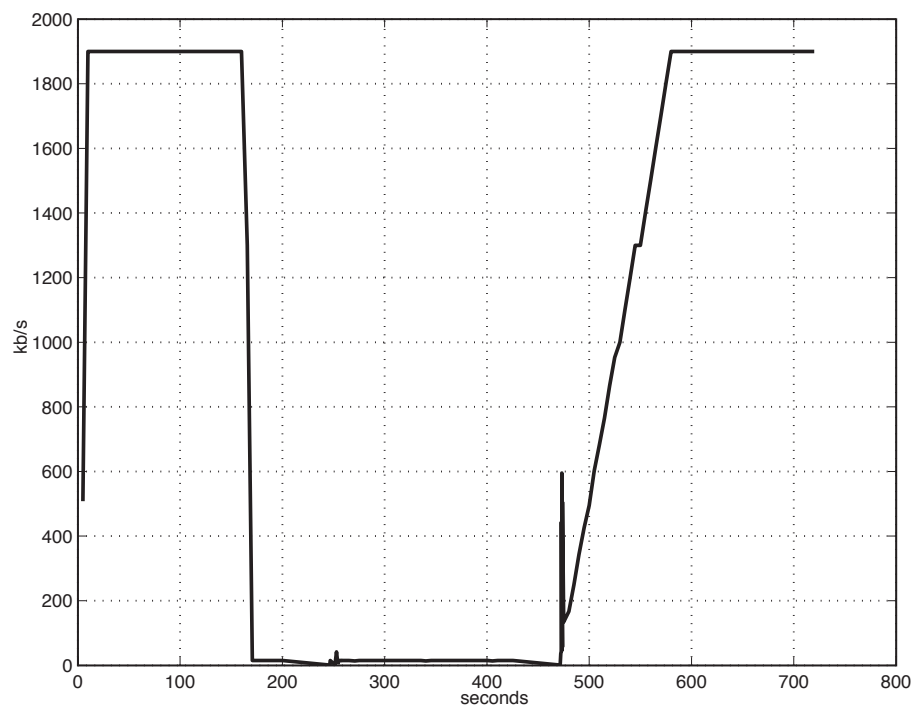


Figure 5: Failover test results (data set #2)

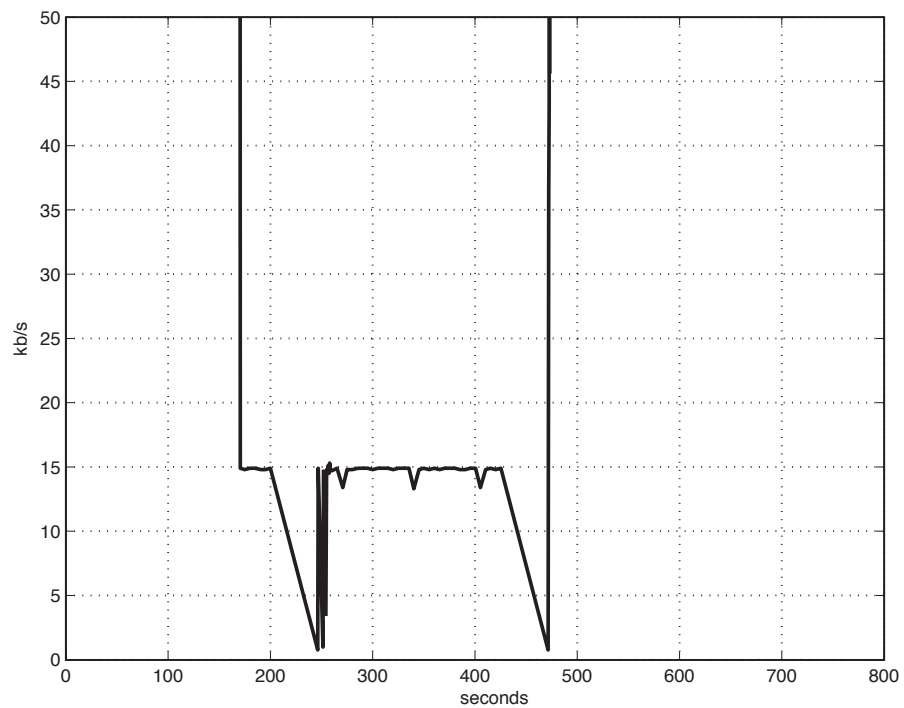


Figure 6: **Detail** of failover test results (data set #2)

Conclusions:

These tests demonstrated that TCP sessions between two hosts, one mobile and one fixed, on separate networks, are capable of full utilization of available bandwidth. The available bandwidth is determined by the mobile host's physical connection(s) back to the fixed host.

We demonstrated that we can reliably take multiple physical links and build a wireless network using TCP which is fault tolerant in a mobile environment, and maximizing the available bandwidth.

Using Cisco router priority on the primary and backup links, the TCP application Iperf demonstrated the maximum available link bandwidth was available to TCP applications to transfer data files between the mobile and fixed hosts and that these transfers were performed as quickly as possible.

Problems and Issues:

One expected problem we confirmed was the great decrease in throughput when using highly asymmetrical links. This was the case when we used the Ku satcom for the forward link and the VHF for the return link. This is not completely surprising given that the return VHF channel is capable of less than 1% of the throughput of the forward Ku Satcom channel. The source of the problem is the low rate of the IP reply acknowledgement packets sent back over the VHF link. There are remedies available to help alleviate this type of problem. Aside from bringing the asymmetrical link speeds closer together, it is possible to tune the TCP stack so it requires fewer acknowledgments for the same payload.

Another issue observed was a lag in switching time between physical links. This problem stems from a lack of a true end-to-end process in place to accurately detect loss of connectivity. The mechanism used to detect loss of a physical link was keep-alive packets. The keep-alive packets were sent every 2 seconds on the VHF system and every 10 seconds on the Ku satcom system. Upon detecting loss of five consecutive keep-alive packets, the router link state would be considered "down". Due to the limitation of the frequency of the keep-alive packets, a significant link handoff delay was observed.

The only means available to detect loss of communications on all of our links was via keep-alive packets. The router requires five keep-alive packets to be lost before it considers the link down. This approach has its own problems in that the link must carry additional packets and even though payload data may be passing over the link, the keep-alives are still sent, therefore taking additional bandwidth on the already slow data stream.

Appendix A: Theoretical Throughput

TCP/IP Application Theoretical Throughput

An application's theoretical throughput is always equal to or slower than the slowest datapath link speed in the system. This is due to the various encoding overhead incurred on the application data by the various datapath layers. This encoding overhead includes IP, TCP, physical link encapsulation and other sources that subtract from the application's throughput.

The TCP/IP application, *iperf*, uses two computers to generate traffic. These computers are connected at 100 Mb/s to the Ethernet switches using 100BASE-TX full duplex. The switches are then connected at 10 Mb/s to the CISCO 3640 routers with 10BASE-TX full duplex. The "fixed side" and "mobile side" routers pass IP data across the RF links using "PPP over HDLC" with a 2.048 Mb/s (fixed-to-mobile) and 256 kb/s (mobile-to-fixed) synchronous serial interface for the satcom link and "PPP over HDLC" with an 19.2 kb/s asynchronous serial interface for the VHF link. Since the modems' serial interfaces are the slowest link in the system, those data rates determine a TCP/IP application's "theoretical throughput".

Figure A.1 shows the equipment interconnections.

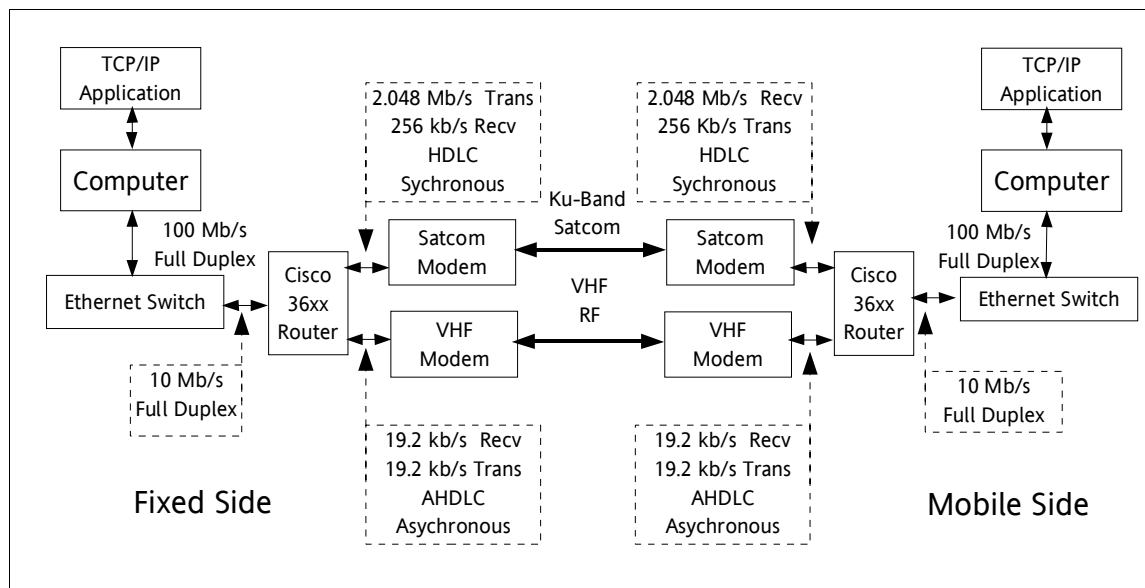


Figure A.1: Equipment interconnections

TCP/IP Application "Theoretical Throughput" Determination

A TCP/IP application's theoretical throughput is determined by the data path overhead and the slowest link in the data path. The overhead is introduced by the different protocols such as Internet Protocol(IP), Transmission Control Protocol (TCP), Point to Point Protocol (PPP), High Level Data Link Control (HDLC), and asynchronous serial communication overhead. The TCP layer receives the user data, adds protocol state overhead, and then sends the data to the IP layer. The IP layer adds addressing and determines whether the resulting TCP/IP message must be fragmented to fit on the physical layer. The amount of physical link data that can be encapsulated into a single packet for transmission is called the "Maximum Transmission Unit" (MTU). Due to the TCP's reliable transport of user data, TCP determines a "maximum segment size" (MSS) based on the physical network's MTU size. For Ethernet, the MTU is 1500 bytes. When the router receives a Ethernet packet, it re-encapsulates the packet as a PPP frame to be synchronously or asynchronously transmitted depending on which datapath (VHF or satcom) is used.

For the VHF case, the application's theoretical throughput is approximately 75.4% of the modem's asynchronous serial interface data rate. For the satcom case, the application's theoretical throughput is approximately 94.2% of the modem's synchronous serial interface data rate. The following calculations show the expected theoretical throughput for a TCP/IP application using the three unique datapaths of "fixed to mobile over satcom", "mobile to fixed over satcom", and "fixed to/from mobile over VHF". The "Expected Theoretical Throughput" calculations were derived using RFC1661, RFC1549, RFC1323, and RFC1332.

Copies of the RFCs are available at <http://faqs.org>.

In the case of a hybrid link, (one direction using VHF, and the other using satcom), the lower bandwidth link will limit the throughput rate of the other. The bandwidth will be limited either by the forward transmission rate or the rate at which acknowledgements can be sent.

Expected theoretical throughput:

N_s = % of modem's serial interface rate is user data.

N_{s_sat} = % of satcom modem's serial interface rate is user data.

N_{s_vhf} = % of VHF modem's serial interface rate is user data.

N_{IH} = Fixed IP headersize is 20 bytes.

N_{TH} = Fixed TCP headersize is 20 bytes.

N_{TO} = Variable length TCP options field of 0 to 40 bytes.

SACK turned on: $8 \cdot (n+2)$ bytes where n = SACK block

Timestamp turned on: 12 bytes

N_{MSS} = Largest TCP segment size before IP fragmentation occurs in bytes.

$MTU_{Ethernet}$ = Largest write size supported by the physical link in bytes.

MS_{user} = 8 bits of user data in serial datapath.

$MS_{overhead}$ = Serial path overhead for every MS_{user} in bits.

N_{PPP} = Point to Point Protocol overhead in bytes.

Determine largest N_{MSS} before IP fragmentation with Ethernet MTU and worst N_{TO} :

$$\begin{aligned} MTU_{Ethernet} &\geq N_{IH} + N_{TH} + N_{TO} + N_{MSS} \\ 1500 \text{ bytes} &\geq N_{MSS} + 20 \text{ bytes} + 40 \text{ bytes} + 20 \text{ bytes} \\ N_{MSS} &\leq 1420 \text{ bytes} \end{aligned}$$

Determine N_{PPP} using RFC1661 {assumes no byte stuffing on PPP serial link},

$$\begin{aligned} N_{PPP} &= |flag \ 1 \text{ byte}| |Address \ 1 \text{ byte}| |Control \ 1 \text{ byte}| |PPP \ protocol \ field \ 2 \text{ bytes}| \\ &\quad |MTU_{ethernet}| |padding| |FCS \ 2 \text{ bytes}| |flag \ 1 \text{ byte}| \\ &= 8 \text{ bytes} + \text{possible stuffing overhead in user data field} = 8 \text{ bytes} \end{aligned}$$

Determine % of modem's serial interface rate is user data,

$$N_s = \frac{N_{MSS}}{N_{PPP} + MTU_{Ethernet}} \cdot \frac{MS_{user}}{MS_{overhead} + MS_{user}}$$

Determine % of satcom modem's serial interface rate is user data (sync serial),

$$N_{s_sat} = \frac{1420 \text{ bytes}}{8 \text{ bytes} + 1500 \text{ bytes}} \cdot \frac{8 \text{ bits}}{8 \text{ bits}} = .9416 = 94.16 \%$$

Determine % of VHF modem's serial interface rate is user data (async serial),

$$N_{s_vhf} = \frac{1420 \text{ bytes}}{8 \text{ bytes} + 1500 \text{ bytes}} \cdot \frac{8 \text{ bits}}{8 \text{ bits} + 2 \text{ bits}} = .7533 = 75.33\%$$

Expected theoretical throughput for satcom and VHF links

R_{f-m} = Theoretical throughput over satcom (fixed to mobile).

R_{m-f} = Theoretical throughput over satcom (mobile to fixed).

R_{VHF} = Theoretical throughput over VHF.

$N_{S_{sat}}$ = % of satcom modem's serial interface rate is user data.

$N_{S_{vhf}}$ = % of VHF modem's serial interface rate is user data.

$R_{S_{satfm}}$ = Satcom modem's serial interface speed in Mb/s (fixed to mobile).

$R_{S_{satmf}}$ = Satcom modem's serial interface speed in kb/s (mobile to fixed).

$R_{S_{VHF}}$ = VHF modem serial interface speed in kb/s (either direction).

Theoretical throughput over satcom (fixed to mobile).

$$R_{f-m} = N_{S_{sat}} \cdot R_{S_{satfm}} = 0.9416 \cdot 2.048 \text{ Mb/s} \approx 1.928 \text{ Mb/s}$$

Theoretical throughput over satcom (mobile to fixed).

$$R_{m-f} = N_{S_{sat}} \cdot R_{S_{satmf}} = 0.9416 \cdot 256 \text{ kb/s} \approx 241.0 \text{ kb/s}$$

Theoretical throughput over VHF (either direction).

$$R_{VHF} = N_{S_{vhf}} \cdot R_{S_{VHF}} = 0.7533 \cdot 19.2 \text{ kb/s} \approx 14.46 \text{ kb/s}$$

Appendix B: Log Files

The log files are labeled as follows:

<month>_<day>_<site>_<local-uplink>_<remote-uplink>_<test-direction>

month: Three letter abbreviation of the month the test was run.

day: Two numbers denoting the day the test was run.

site: Fixed (fxd), or Mobile (mob)

local-uplink: Satcom (sat), or VHF (vhf)

remote-uplink: Satcom (sat), or VHF (vhf)

test-direction: Data sample of the Receive (rx) or Transmit (tx) side of the local interface.

“*feb_05_fxd_sat_sat_rx*” would imply a test run on February 5th, at the Fixed station, with Fixed station satellite uplink paired with Mobile station satellite downlink, Mobile station satellite uplink paired with Fixed station satellite downlink, and logging data on the receive side of the fixed station.

feb_05_fxd_sat_sat_rx

Script started on Wed Feb 05 10:00:06 2003

[51] [aatt-temp2] >./fxd_sat_recv

Fixed station - Satellite Receive

Script started - Wed Feb 5 10:00:20 EST 2003

TTCP PERFORMANCE

Mode ----- TCP - Receive
Packet Size ----- 16384 bytes
Number of Packets ----- 2048
Socket Buffer Size ----- 135000 bytes
REAL Buffer Size ----- 135780 bytes
Connection from ----- 139.88.12.31 (mobile-pc2)
Throughput ----- 0.23 (Mbits/sec)

Elapsed time: 277.71 seconds CPU usage: 0%

Received: 5355 pkts

Server listening on TCP port 5001

TCP window size: 132 KByte

[4] local 139.88.20.33 port 5001 connected with 139.88.12.31 port 32801

[ID]	Interval	Transfer	Bandwidth
[4]	0.0- 5.0 sec	105 KBytes	167 Kbits/sec
[4]	5.0-10.0 sec	152 KBytes	243 Kbits/sec
[4]	10.0-15.1 sec	44.3 KBytes	69.3 Kbits/sec
[4]	15.1-20.2 sec	35.7 KBytes	56.5 Kbits/sec
[4]	20.2-25.3 sec	30.6 KBytes	48.4 Kbits/sec
[4]	25.3-30.0 sec	164 KBytes	276 Kbits/sec
[4]	30.0-35.0 sec	152 KBytes	243 Kbits/sec
[4]	35.0-40.0 sec	152 KBytes	243 Kbits/sec
[4]	40.0-45.0 sec	152 KBytes	243 Kbits/sec
[4]	45.0-50.0 sec	152 KBytes	243 Kbits/sec
[4]	50.0-55.0 sec	152 KBytes	243 Kbits/sec
[4]	55.0-60.0 sec	152 KBytes	243 Kbits/sec
[4]	60.0-65.0 sec	152 KBytes	243 Kbits/sec
[4]	65.0-70.0 sec	152 KBytes	243 Kbits/sec
[4]	70.0-75.0 sec	152 KBytes	243 Kbits/sec
[4]	75.0-80.0 sec	152 KBytes	243 Kbits/sec
[4]	80.0-85.0 sec	152 KBytes	243 Kbits/sec
[4]	85.0-90.0 sec	152 KBytes	243 Kbits/sec
[4]	90.0-95.0 sec	152 KBytes	243 Kbits/sec

[4]	95.0-100.0 sec	152 KBytes	243 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	100.0-105.0 sec	152 KBytes	243 Kbits/sec
[4]	105.0-110.0 sec	152 KBytes	243 Kbits/sec
[4]	110.0-115.0 sec	152 KBytes	243 Kbits/sec
[4]	115.0-120.0 sec	152 KBytes	243 Kbits/sec
[4]	120.0-125.0 sec	152 KBytes	243 Kbits/sec
[4]	125.0-130.0 sec	152 KBytes	243 Kbits/sec
[4]	130.0-135.0 sec	152 KBytes	243 Kbits/sec
[4]	135.0-140.0 sec	152 KBytes	243 Kbits/sec
[4]	140.0-145.0 sec	152 KBytes	243 Kbits/sec
[4]	145.0-150.0 sec	152 KBytes	243 Kbits/sec
[4]	150.0-155.0 sec	152 KBytes	243 Kbits/sec
[4]	155.0-160.0 sec	152 KBytes	243 Kbits/sec
[4]	160.0-165.0 sec	152 KBytes	243 Kbits/sec
[4]	165.0-172.2 sec	124 KBytes	138 Kbits/sec
[4]	172.2-175.0 sec	180 KBytes	511 Kbits/sec
[4]	175.0-180.0 sec	152 KBytes	243 Kbits/sec
[4]	180.0-185.0 sec	152 KBytes	243 Kbits/sec
[4]	185.0-190.0 sec	152 KBytes	243 Kbits/sec
[4]	190.0-195.0 sec	152 KBytes	243 Kbits/sec
[4]	195.0-200.0 sec	152 KBytes	243 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	200.0-205.0 sec	152 KBytes	243 Kbits/sec
[4]	205.0-210.0 sec	152 KBytes	243 Kbits/sec
[4]	210.0-215.0 sec	152 KBytes	243 Kbits/sec
[4]	215.0-220.0 sec	152 KBytes	243 Kbits/sec
[4]	220.0-225.0 sec	152 KBytes	243 Kbits/sec
[4]	225.0-230.0 sec	152 KBytes	243 Kbits/sec
[4]	230.0-235.0 sec	152 KBytes	243 Kbits/sec
[4]	235.0-240.0 sec	152 KBytes	243 Kbits/sec
[4]	0.0-244.1 sec	6.9 MBytes	231 Kbits/sec

^C

Script ended - Wed Feb 5 10:10:39 EST 2003

[52] [aatt-temp2] >exit

script done on Wed Feb 05 10:10:42 2003

feb_05_fxd_sat_sat_tx

Script started on Wed Feb 05 09:52:59 2003
[51] [aatt-temp2] >./fxd_sat_send mobile-pc2

Fixed station - Satellite Transmit

Script started - Wed Feb 5 09:53:14 EST 2003

Starting Pings

PING mobile-pc2: 56 data bytes

64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=515. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=515. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=515. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=515. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=515. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=515. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=515. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=515. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=515. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=515. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss
round-trip (ms) min/avg/max = 515/515/515

PING mobile-pc2: 504 data bytes

512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=532. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=533. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=532. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=532. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=532. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=532. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=532. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=532. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=532. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=532. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss
round-trip (ms) min/avg/max = 532/532/533

PING mobile-pc2: 1016 data bytes

1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=553. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=553. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=553. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=553. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=553. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=553. ms

1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=553. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=553. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=553. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=553. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 553/553/553

PING mobile-pc2: 1392 data bytes

1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=568. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=568. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=568. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=568. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=568. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=568. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=568. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=568. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=568. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=568. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 568/568/568

PING mobile-pc2: 1442 data bytes

1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=570. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=570. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=570. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=570. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=570. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=570. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=570. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=570. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=570. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=570. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 570/570/570

PING mobile-pc2: 2040 data bytes

2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=593. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=593. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=593. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=593. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=593. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=593. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=593. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=593. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=593. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=593. ms

```

----mobile-pc2 PING Statistics----
10 packets transmitted, 10 packets received, 0% packet loss
round-trip (ms)  min/avg/max = 593/593/593
PING mobile-pc2: 4088 data bytes
4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=670. ms
4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=669. ms
4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=669. ms
4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=669. ms
4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=669. ms
4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=669. ms
4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=669. ms
4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=669. ms
4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=669. ms
4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=669. ms

```

```

----mobile-pc2 PING Statistics----
10 packets transmitted, 10 packets received, 0% packet loss
round-trip (ms)  min/avg/max = 669/669/670

```

Starting TTCP

TTCP PERFORMANCE

```

Mode ----- TCP - Transmit
Packet Size ----- 16384 bytes
Number of Packets ----- 500
Socket Buffer Size ----- 135000 bytes
REAL Buffer Size ----- 135000 bytes
Connection made to ----- 139.88.12.31 (mobile-pc2)
Throughput ..... 1.78 (Mbits/sec)

```

```

Elapsed time: 35.94 seconds    CPU usage:    0%
Xmit: 13.91 pkts/sec

```

Sleeping for 15 seconds

Starting IPerf

```

-----
Client connecting to mobile-pc2, TCP port 5001
TCP window size: 132 KByte
-----

```

```

[  4] local 139.88.20.33 port 32802 connected with 139.88.12.31 port 5001
[ ID] Interval      Transfer      Bandwidth
[  4] 0.0- 5.3 sec    408 KBytes    614 Kbits/sec
[  4] 5.3-10.2 sec    1.2 MBytes    1.9 Mbits/sec

```

[4]	10.2-15.1 sec	1.2 MBytes	1.9 Mbits/sec
[4]	15.1-20.5 sec	1.3 MBytes	1.9 Mbits/sec
[4]	20.5-25.4 sec	1.2 MBytes	1.9 Mbits/sec
[4]	25.4-30.3 sec	1.2 MBytes	1.9 Mbits/sec
[4]	30.3-35.2 sec	1.2 MBytes	1.9 Mbits/sec
[4]	35.2-40.1 sec	1.2 MBytes	1.9 Mbits/sec
[4]	40.1-45.5 sec	1.3 MBytes	1.9 Mbits/sec
[4]	45.5-50.4 sec	1.2 MBytes	1.9 Mbits/sec
[4]	50.4-55.3 sec	1.2 MBytes	1.9 Mbits/sec
[4]	55.3-60.1 sec	1.2 MBytes	1.9 Mbits/sec
[4]	60.1-65.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	65.0-70.5 sec	1.3 MBytes	1.9 Mbits/sec
[4]	70.5-75.3 sec	1.2 MBytes	1.9 Mbits/sec
[4]	75.3-80.2 sec	1.2 MBytes	1.9 Mbits/sec
[4]	80.2-85.1 sec	1.2 MBytes	1.9 Mbits/sec
[4]	85.1-90.5 sec	1.3 MBytes	1.9 Mbits/sec
[4]	90.5-95.4 sec	1.2 MBytes	1.9 Mbits/sec
[4]	95.4-100.3 sec	1.2 MBytes	1.9 Mbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	100.3-105.2 sec	1.2 MBytes	1.9 Mbits/sec
[4]	105.2-110.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	110.0-115.5 sec	1.3 MBytes	1.9 Mbits/sec
[4]	115.5-120.4 sec	1.2 MBytes	1.9 Mbits/sec
[4]	120.4-125.3 sec	1.2 MBytes	1.9 Mbits/sec
[4]	125.3-130.1 sec	1.2 MBytes	1.9 Mbits/sec
[4]	130.1-135.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	135.0-140.4 sec	1.3 MBytes	1.9 Mbits/sec
[4]	140.4-145.3 sec	1.2 MBytes	1.9 Mbits/sec
[4]	145.3-150.2 sec	1.2 MBytes	1.9 Mbits/sec
[4]	150.2-155.1 sec	1.2 MBytes	1.9 Mbits/sec
[4]	155.1-160.5 sec	1.3 MBytes	1.9 Mbits/sec
[4]	160.5-165.4 sec	1.2 MBytes	1.9 Mbits/sec
[4]	165.4-170.3 sec	1.2 MBytes	1.9 Mbits/sec
[4]	170.3-175.2 sec	1.2 MBytes	1.9 Mbits/sec
[4]	175.2-180.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	180.0-185.5 sec	1.3 MBytes	1.9 Mbits/sec
[4]	185.5-190.3 sec	1.2 MBytes	1.9 Mbits/sec
[4]	190.3-195.2 sec	1.2 MBytes	1.9 Mbits/sec
[4]	195.2-200.1 sec	1.2 MBytes	1.9 Mbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	200.1-205.5 sec	1.3 MBytes	1.9 Mbits/sec
[4]	205.5-210.4 sec	1.2 MBytes	1.9 Mbits/sec
[4]	210.4-215.3 sec	1.2 MBytes	1.9 Mbits/sec
[4]	215.3-220.2 sec	1.2 MBytes	1.9 Mbits/sec
[4]	220.2-225.1 sec	1.2 MBytes	1.9 Mbits/sec
[4]	225.1-230.5 sec	1.3 MBytes	1.9 Mbits/sec
[4]	230.5-235.4 sec	1.2 MBytes	1.9 Mbits/sec
[4]	235.4-240.2 sec	1.2 MBytes	1.9 Mbits/sec
[4]	0.0-240.8 sec	56.8 MBytes	1.9 Mbits/sec

```
Script ended - Wed Feb 5 09:59:14 EST 2003  
[52] [aatt-temp2] >exit  
exit
```

```
script done on Wed Feb 05 09:59:43 2003
```

feb_05_fxd_sat_vhf_rx

Script started on Wed Feb 05 10:22:29 2003

[51] [aatt-temp2] >./fxd_vhf_recv

Fixed station - VHF Receive

Script started - Wed Feb 5 10:22:44 EST 2003

TTCP PERFORMANCE

Mode ----- TCP - Receive
Packet Size ----- 8192 bytes
Number of Packets ----- 2048
REAL Buffer Size ----- 8760 bytes
Connection from ----- 139.88.12.31 (mobile-pc2)
Throughput ----- 0.01 (Mbits/sec)

Elapsed time: 228.45 seconds CPU usage: 0%
Received: 300 pkts

Server listening on TCP port 5001
TCP window size: 8.0 KByte (default)

[4] local 139.88.20.33 port 5001 connected with 139.88.12.31 port 32804

[ID]	Interval	Transfer	Bandwidth
[4]	0.0- 5.2 sec	9.4 KBytes	14.6 Kbits/sec
[4]	5.2-10.3 sec	9.4 KBytes	14.7 Kbits/sec
[4]	10.3-15.5 sec	9.4 KBytes	14.6 Kbits/sec
[4]	15.5-20.6 sec	9.4 KBytes	14.6 Kbits/sec
[4]	20.6-25.8 sec	9.4 KBytes	14.6 Kbits/sec
[4]	25.8-30.2 sec	8.0 KBytes	14.7 Kbits/sec
[4]	30.2-35.8 sec	10.3 KBytes	14.6 Kbits/sec
[4]	35.8-40.2 sec	8.0 KBytes	14.7 Kbits/sec
[4]	40.2-45.3 sec	9.4 KBytes	14.7 Kbits/sec
[4]	45.3-50.5 sec	9.4 KBytes	14.6 Kbits/sec
[4]	50.5-55.6 sec	9.4 KBytes	14.7 Kbits/sec
[4]	55.6-60.8 sec	9.4 KBytes	14.6 Kbits/sec
[4]	60.8-65.1 sec	8.0 KBytes	14.7 Kbits/sec
[4]	65.1-70.7 sec	10.3 KBytes	14.6 Kbits/sec
[4]	70.7-75.1 sec	8.0 KBytes	14.7 Kbits/sec
[4]	75.1-80.3 sec	9.4 KBytes	14.6 Kbits/sec
[4]	80.3-85.4 sec	9.4 KBytes	14.6 Kbits/sec
[4]	85.4-90.6 sec	9.4 KBytes	14.6 Kbits/sec
[4]	90.6-95.7 sec	9.4 KBytes	14.6 Kbits/sec
[4]	95.7-100.1 sec	8.0 KBytes	14.7 Kbits/sec

[ID]	Interval	Transfer	Bandwidth
[4]	100.1-105.7 sec	10.3 KBytes	14.6 Kbits/sec
[4]	105.7-110.1 sec	8.0 KBytes	14.6 Kbits/sec
[4]	110.1-115.2 sec	9.4 KBytes	14.7 Kbits/sec
[4]	115.2-120.4 sec	9.4 KBytes	14.6 Kbits/sec
[4]	120.4-125.5 sec	9.4 KBytes	14.6 Kbits/sec
[4]	125.5-130.7 sec	9.4 KBytes	14.6 Kbits/sec
[4]	130.7-135.0 sec	8.0 KBytes	14.7 Kbits/sec
[4]	135.0-140.7 sec	10.3 KBytes	14.6 Kbits/sec
[4]	140.7-145.0 sec	8.0 KBytes	14.7 Kbits/sec
[4]	145.0-150.2 sec	9.4 KBytes	14.6 Kbits/sec
[4]	150.2-155.3 sec	9.4 KBytes	14.7 Kbits/sec
[4]	155.3-160.5 sec	9.4 KBytes	14.6 Kbits/sec
[4]	160.5-165.6 sec	9.4 KBytes	14.6 Kbits/sec
[4]	165.6-170.0 sec	8.0 KBytes	14.6 Kbits/sec
[4]	170.0-175.6 sec	10.3 KBytes	14.7 Kbits/sec
[4]	175.6-180.8 sec	9.4 KBytes	14.7 Kbits/sec
[4]	180.8-185.1 sec	8.0 KBytes	14.6 Kbits/sec
[4]	185.1-190.3 sec	9.4 KBytes	14.6 Kbits/sec
[4]	190.3-195.5 sec	9.4 KBytes	14.6 Kbits/sec
[4]	195.5-200.6 sec	9.4 KBytes	14.6 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	200.6-205.4 sec	8.9 KBytes	14.7 Kbits/sec
[4]	205.4-210.6 sec	9.4 KBytes	14.6 Kbits/sec
[4]	210.6-215.8 sec	9.4 KBytes	14.7 Kbits/sec
[4]	215.8-220.1 sec	8.0 KBytes	14.6 Kbits/sec
[4]	220.1-225.3 sec	9.4 KBytes	14.7 Kbits/sec
[4]	225.3-230.4 sec	9.4 KBytes	14.6 Kbits/sec
[4]	230.4-235.6 sec	9.4 KBytes	14.6 Kbits/sec
[4]	235.6-240.4 sec	8.9 KBytes	14.7 Kbits/sec
[4]	240.4-245.6 sec	9.4 KBytes	14.6 Kbits/sec
[4]	0.0-249.2 sec	456 KBytes	14.6 Kbits/sec

^C

Script ended - Wed Feb 5 10:32:52 EST 2003

[52] [aatt-temp2] >exit
exit

script done on Wed Feb 05 10:32:55 2003

feb_05_fxd_sat_vhf_tx

Script started on Wed Feb 05 10:14:42 2003

[51] [aatt-temp2] >./fxd_sat_send mobile-pc2

Fixed station - Satellite Transmit

Script started - Wed Feb 5 10:14:56 EST 2003

Starting Pings

PING mobile-pc2: 56 data bytes

64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=323. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=324. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=324. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=323. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=323. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=323. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=323. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=323. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=323. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=323. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 323/323/324

PING mobile-pc2: 504 data bytes

512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=564. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=600. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=564. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=599. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=564. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=601. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=564. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=600. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=564. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=599. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 564/581/601

PING mobile-pc2: 1016 data bytes

1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=840. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=839. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=839. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=839. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=840. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=840. ms

1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=840. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=840. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=839. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=839. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 839/839/840

PING mobile-pc2: 1392 data bytes

1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=1042. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=1042. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=1042. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=1042. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=1042. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=1042. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=1042. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=1042. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=1041. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=1042. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 1041/1041/1042

PING mobile-pc2: 1442 data bytes

1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=1069. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=1069. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=1069. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=1069. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=1070. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=1069. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=1069. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=1069. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=1070. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=1069. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 1069/1069/1070

PING mobile-pc2: 2040 data bytes

2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=1417. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=1551. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=1685. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=1813. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=1956. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=2073. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=2212. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=2341. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=2469. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=2597. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 1417/2011/2597

PING mobile-pc2: 4088 data bytes

4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=2546. ms

4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=3791. ms

4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=5035. ms

4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=6280. ms

4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=7518. ms

4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=8757. ms

4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=10077. ms

4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=11488. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 8 packets received, 20% packet loss

round-trip (ms) min/avg/max = 2546/6936/11488

Starting TTCP

TTCP PERFORMANCE

Mode ----- TCP - Transmit

Packet Size ----- 16384 bytes

Number of Packets ----- 500

Socket Buffer Size ----- 135000 bytes

REAL Buffer Size ----- 135000 bytes

Connection made to ----- 139.88.12.31 (mobile-pc2)

Throughput 0.94 (Mbits/sec)

Elapsed time: 68.07 seconds CPU usage: 0%

Xmit: 7.35 pkts/sec

Sleeping for 15 seconds

Starting IPerf

Client connecting to mobile-pc2, TCP port 5001

TCP window size: 132 KByte

[4] local 139.88.20.33 port 32804 connected with 139.88.12.31 port 5001

[ID]	Interval	Transfer	Bandwidth
-------	----------	----------	-----------

[4]	0.0- 5.2 sec	808 KBytes	1.2 Mbits/sec
------	--------------	------------	---------------

[4]	5.2-10.6 sec	936 KBytes	1.4 Mbits/sec
------	--------------	------------	---------------

[4]	10.6-15.1 sec	664 KBytes	1.2 Mbits/sec
------	---------------	------------	---------------

[4]	15.1-20.2 sec	800 KBytes	1.2 Mbits/sec
------	---------------	------------	---------------

[4]	20.2-25.4 sec	800 KBytes	1.2 Mbits/sec
[4]	25.4-30.6 sec	800 KBytes	1.2 Mbits/sec
[4]	30.6-35.7 sec	800 KBytes	1.2 Mbits/sec
[4]	35.7-40.8 sec	800 KBytes	1.2 Mbits/sec
[4]	40.8-45.1 sec	664 KBytes	1.2 Mbits/sec
[4]	45.1-50.5 sec	936 KBytes	1.3 Mbits/sec
[4]	50.5-55.7 sec	800 KBytes	1.2 Mbits/sec
[4]	55.7-60.1 sec	664 KBytes	1.2 Mbits/sec
[4]	60.1-65.4 sec	800 KBytes	1.2 Mbits/sec
[4]	65.4-70.5 sec	800 KBytes	1.2 Mbits/sec
[4]	70.5-75.7 sec	800 KBytes	1.2 Mbits/sec
[4]	75.7-80.7 sec	800 KBytes	1.3 Mbits/sec
[4]	80.7-85.7 sec	800 KBytes	1.2 Mbits/sec
[4]	85.7-90.8 sec	800 KBytes	1.2 Mbits/sec
[4]	90.8-95.7 sec	800 KBytes	1.3 Mbits/sec
[4]	95.7-100.5 sec	800 KBytes	1.3 Mbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	100.5-105.2 sec	800 KBytes	1.3 Mbits/sec
[4]	105.2-110.3 sec	800 KBytes	1.2 Mbits/sec
[4]	110.3-115.3 sec	800 KBytes	1.3 Mbits/sec
[4]	115.3-120.2 sec	800 KBytes	1.3 Mbits/sec
[4]	120.2-125.3 sec	800 KBytes	1.2 Mbits/sec
[4]	125.3-130.5 sec	800 KBytes	1.2 Mbits/sec
[4]	130.5-135.7 sec	800 KBytes	1.2 Mbits/sec
[4]	135.7-140.0 sec	672 KBytes	1.2 Mbits/sec
[4]	140.0-145.1 sec	800 KBytes	1.2 Mbits/sec
[4]	145.1-150.1 sec	800 KBytes	1.3 Mbits/sec
[4]	150.1-155.1 sec	800 KBytes	1.2 Mbits/sec
[4]	155.1-160.1 sec	800 KBytes	1.2 Mbits/sec
[4]	160.1-165.3 sec	800 KBytes	1.2 Mbits/sec
[4]	165.3-170.2 sec	800 KBytes	1.3 Mbits/sec
[4]	170.2-175.3 sec	800 KBytes	1.2 Mbits/sec
[4]	175.3-180.4 sec	800 KBytes	1.2 Mbits/sec
[4]	180.4-185.2 sec	800 KBytes	1.3 Mbits/sec
[4]	185.2-190.3 sec	800 KBytes	1.2 Mbits/sec
[4]	190.3-195.3 sec	800 KBytes	1.2 Mbits/sec
[4]	195.3-200.7 sec	800 KBytes	1.2 Mbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	200.7-205.2 sec	664 KBytes	1.2 Mbits/sec
[4]	205.2-210.5 sec	800 KBytes	1.2 Mbits/sec
[4]	210.5-215.4 sec	800 KBytes	1.3 Mbits/sec
[4]	215.4-220.5 sec	800 KBytes	1.2 Mbits/sec
[4]	220.5-225.3 sec	800 KBytes	1.3 Mbits/sec
[4]	225.3-230.6 sec	800 KBytes	1.2 Mbits/sec
[4]	230.6-235.8 sec	800 KBytes	1.2 Mbits/sec
[4]	235.8-240.2 sec	664 KBytes	1.2 Mbits/sec
[4]	0.0-241.0 sec	37.0 MBytes	1.2 Mbits/sec

Script ended - Wed Feb 5 10:21:41 EST 2003

[52] [aatt-temp2] >exit

exit

script done on Wed Feb 05 10:21:43 2003

feb_05_fxd_vhf_sat_rx

Script started on Wed Feb 05 10:54:33 2003

[51] [aatt-temp2] >./fxd_sat_recv

Fixed station - Satellite Receive

Script started - Wed Feb 5 10:54:38 EST 2003

TTCP PERFORMANCE

Mode ----- TCP - Receive
Packet Size ----- 16384 bytes
Number of Packets ----- 2048
Socket Buffer Size ----- 135000 bytes
REAL Buffer Size ----- 135780 bytes
Connection from ----- 139.88.12.31 (mobile-pc2)
Throughput ----- 0.23 (Mbits/sec)

Elapsed time: 275.01 seconds CPU usage: 0%

Received: 5353 pkts

Server listening on TCP port 5001

TCP window size: 132 KByte

[4] local 139.88.20.33 port 5001 connected with 139.88.12.31 port 32808

[ID]	Interval	Transfer	Bandwidth
[4]	0.0- 5.0 sec	134 KBytes	212 Kbits/sec
[4]	5.0-12.8 sec	143 KBytes	147 Kbits/sec
[4]	12.8-15.1 sec	26.9 KBytes	93.3 Kbits/sec
[4]	15.1-20.1 sec	56.9 KBytes	91.7 Kbits/sec
[4]	20.1-25.0 sec	179 KBytes	288 Kbits/sec
[4]	25.0-30.0 sec	152 KBytes	243 Kbits/sec
[4]	30.0-35.0 sec	152 KBytes	243 Kbits/sec
[4]	35.0-40.0 sec	152 KBytes	243 Kbits/sec
[4]	40.0-45.0 sec	152 KBytes	243 Kbits/sec
[4]	45.0-50.0 sec	152 KBytes	243 Kbits/sec
[4]	50.0-55.0 sec	152 KBytes	243 Kbits/sec
[4]	55.0-60.0 sec	152 KBytes	243 Kbits/sec
[4]	60.0-65.0 sec	152 KBytes	243 Kbits/sec
[4]	65.0-70.0 sec	152 KBytes	243 Kbits/sec
[4]	70.0-75.0 sec	151 KBytes	243 Kbits/sec
[4]	75.0-80.0 sec	152 KBytes	243 Kbits/sec
[4]	80.0-85.0 sec	152 KBytes	243 Kbits/sec
[4]	85.0-90.0 sec	152 KBytes	243 Kbits/sec
[4]	90.0-95.0 sec	152 KBytes	243 Kbits/sec

[ID]	Interval	Transfer	Bandwidth
[4]	95.0-100.0 sec	152 KBytes	243 Kbits/sec
[4]	100.0-105.0 sec	152 KBytes	243 Kbits/sec
[4]	105.0-110.0 sec	152 KBytes	243 Kbits/sec
[4]	110.0-115.0 sec	152 KBytes	243 Kbits/sec
[4]	115.0-120.0 sec	152 KBytes	243 Kbits/sec
[4]	120.0-125.0 sec	152 KBytes	243 Kbits/sec
[4]	125.0-130.0 sec	152 KBytes	243 Kbits/sec
[4]	130.0-136.1 sec	96.0 KBytes	127 Kbits/sec
[4]	136.1-140.0 sec	208 KBytes	419 Kbits/sec
[4]	140.0-145.0 sec	152 KBytes	243 Kbits/sec
[4]	145.0-150.1 sec	152 KBytes	243 Kbits/sec
[4]	150.1-155.1 sec	152 KBytes	243 Kbits/sec
[4]	155.1-160.1 sec	152 KBytes	243 Kbits/sec
[4]	160.1-165.1 sec	152 KBytes	243 Kbits/sec
[4]	165.1-170.0 sec	151 KBytes	244 Kbits/sec
[4]	170.0-175.0 sec	152 KBytes	243 Kbits/sec
[4]	175.0-180.0 sec	152 KBytes	243 Kbits/sec
[4]	180.0-185.0 sec	151 KBytes	242 Kbits/sec
[4]	185.0-190.0 sec	152 KBytes	243 Kbits/sec
[4]	190.0-195.0 sec	152 KBytes	243 Kbits/sec
[4]	195.0-200.0 sec	152 KBytes	243 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	200.0-205.0 sec	152 KBytes	243 Kbits/sec
[4]	205.0-210.0 sec	152 KBytes	243 Kbits/sec
[4]	210.0-215.0 sec	152 KBytes	243 Kbits/sec
[4]	215.0-220.0 sec	152 KBytes	243 Kbits/sec
[4]	220.0-225.0 sec	152 KBytes	243 Kbits/sec
[4]	225.0-230.0 sec	152 KBytes	243 Kbits/sec
[4]	230.0-235.0 sec	152 KBytes	243 Kbits/sec
[4]	235.0-240.0 sec	152 KBytes	243 Kbits/sec
[4]	0.0-243.5 sec	7.0 MBytes	236 Kbits/sec

^C

Script ended - Wed Feb 5 11:05:23 EST 2003

[52] [aatt-temp2] >exit
exit

script done on Wed Feb 05 11:05:24 2003

feb_05_fxd_vhf_sat_tx

[52] [aatt-temp2] >./fxd_sat_send mobile-pc2

Fixed station - VHF Transmit

Script started - Wed Feb 5 10:44:40 EST 2003

Starting Pings

PING mobile-pc2: 56 data bytes

64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=378. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=343. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=322. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=342. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=322. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=343. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=322. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=342. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=322. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=342. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 322/337/378

PING mobile-pc2: 504 data bytes

512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=741. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=575. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=575. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=575. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=580. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=575. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=575. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=575. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=575. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=575. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 575/592/741

PING mobile-pc2: 1016 data bytes

1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=1037. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=931. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=871. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=865. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=931. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=864. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=931. ms

1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=862. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=932. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=865. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 862/908/1037

PING mobile-pc2: 1392 data bytes

1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=1253. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=1078. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=1078. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=1078. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=1079. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=1078. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=1078. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=1079. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=1078. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=1078. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 1078/1095/1253

PING mobile-pc2: 1442 data bytes

1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=1287. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=1205. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=1108. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=1107. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=1108. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=1107. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=1107. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=1107. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=1107. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=1107. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 1107/1135/1287

PING mobile-pc2: 2040 data bytes

2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=1625. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=1810. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=1982. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=2169. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=2332. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=2514. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=2687. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=2859. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=3040. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=3203. ms

```

----mobile-pc2 PING Statistics----
10 packets transmitted, 10 packets received, 0% packet loss
round-trip (ms)  min/avg/max = 1625/2422/3203
PING mobile-pc2: 4088 data bytes
4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=2904. ms
4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=4306. ms
4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=5599. ms
4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=6893. ms
4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=8179. ms
4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=9460. ms
4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=10824. ms
4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=12226. ms

```

```

----mobile-pc2 PING Statistics----
10 packets transmitted, 8 packets received, 20% packet loss
round-trip (ms)  min/avg/max = 2904/7548/12226

```

Starting TTCP

TTCP PERFORMANCE

```

Mode ----- TCP - Transmit
Packet Size ----- 8192 bytes
Number of Packets ----- 50
REAL Buffer Size ----- 8192 bytes
Connection made to ----- 139.88.12.31 (mobile-pc2)
Throughput ..... 0.01 (Mbits/sec)

```

```

Elapsed time: 218.10 seconds    CPU usage:    0%
Xmit: 0.23 pkts/sec

```

Sleeping for 15 seconds

Starting IPerf

```

-----
Client connecting to mobile-pc2, TCP port 5001
TCP window size: 8.0 KByte (default)
-----
[  4] local 139.88.20.33 port 32809 connected with 139.88.12.31 port 5001
[ ID] Interval      Transfer    Bandwidth
[  4] 0.0- 5.7 sec   24.0 KBytes 33.6 Kbits/sec
[  4] 5.7-10.1 sec   8.0 KBytes 14.5 Kbits/sec
[  4] 10.1-18.9 sec  16.0 KBytes 14.6 Kbits/sec
[  4] 18.9-23.3 sec   8.0 KBytes 14.5 Kbits/sec
[  4] 23.3-27.7 sec   8.0 KBytes 14.5 Kbits/sec
[  4] 27.7-32.1 sec   8.0 KBytes 14.5 Kbits/sec

```

[4]	32.1-36.6 sec	8.0 KBytes	14.5 Kbits/sec
[4]	36.6-41.0 sec	8.0 KBytes	14.5 Kbits/sec
[4]	41.0-45.4 sec	8.0 KBytes	14.5 Kbits/sec
[4]	45.4-54.2 sec	16.0 KBytes	14.6 Kbits/sec
[4]	54.2-58.6 sec	8.0 KBytes	14.5 Kbits/sec
[4]	58.6-63.0 sec	8.0 KBytes	14.5 Kbits/sec
[4]	63.0-67.4 sec	8.0 KBytes	14.5 Kbits/sec
[4]	67.4-71.8 sec	8.0 KBytes	14.5 Kbits/sec
[4]	71.8-76.2 sec	8.0 KBytes	14.5 Kbits/sec
[4]	76.2-80.6 sec	8.0 KBytes	14.6 Kbits/sec
[4]	80.6-85.0 sec	8.0 KBytes	14.5 Kbits/sec
[4]	85.0-93.8 sec	16.0 KBytes	14.6 Kbits/sec
[4]	93.8-98.2 sec	8.0 KBytes	14.5 Kbits/sec
[4]	98.2-102.6 sec	8.0 KBytes	14.5 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	102.6-107.0 sec	8.0 KBytes	14.5 Kbits/sec
[4]	107.0-111.5 sec	8.0 KBytes	14.4 Kbits/sec
[4]	111.5-115.9 sec	8.0 KBytes	14.5 Kbits/sec
[4]	115.9-120.3 sec	8.0 KBytes	14.6 Kbits/sec
[4]	120.3-129.1 sec	16.0 KBytes	14.6 Kbits/sec
[4]	129.1-133.5 sec	8.0 KBytes	14.5 Kbits/sec
[4]	133.5-137.9 sec	8.0 KBytes	14.5 Kbits/sec
[4]	137.9-142.3 sec	8.0 KBytes	14.5 Kbits/sec
[4]	142.3-146.7 sec	8.0 KBytes	14.5 Kbits/sec
[4]	146.7-151.1 sec	8.0 KBytes	14.5 Kbits/sec
[4]	151.1-155.5 sec	8.0 KBytes	14.5 Kbits/sec
[4]	155.5-164.3 sec	16.0 KBytes	14.6 Kbits/sec
[4]	164.3-168.7 sec	8.0 KBytes	14.5 Kbits/sec
[4]	168.7-173.1 sec	8.0 KBytes	14.4 Kbits/sec
[4]	173.1-177.5 sec	8.0 KBytes	14.5 Kbits/sec
[4]	177.5-181.9 sec	8.0 KBytes	14.5 Kbits/sec
[4]	181.9-186.3 sec	8.0 KBytes	14.5 Kbits/sec
[4]	186.3-190.7 sec	8.0 KBytes	14.5 Kbits/sec
[4]	190.7-195.2 sec	8.0 KBytes	14.5 Kbits/sec
[4]	195.2-203.9 sec	16.0 KBytes	14.6 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	203.9-208.3 sec	8.0 KBytes	14.5 Kbits/sec
[4]	208.3-212.8 sec	8.0 KBytes	14.5 Kbits/sec
[4]	212.8-217.2 sec	8.0 KBytes	14.5 Kbits/sec
[4]	217.2-221.6 sec	8.0 KBytes	14.5 Kbits/sec
[4]	221.6-226.0 sec	8.0 KBytes	14.5 Kbits/sec
[4]	226.0-230.4 sec	8.0 KBytes	14.6 Kbits/sec
[4]	230.4-239.2 sec	16.0 KBytes	14.6 Kbits/sec
[4]	239.2-243.6 sec	8.0 KBytes	14.5 Kbits/sec
[4]	0.0-251.5 sec	456 KBytes	14.5 Kbits/sec

Script ended - Wed Feb 5 10:54:07 EST 2003

[53] [aatt-temp2] >exit

exit

script done on Wed Feb 05 10:54:22 2003

feb_05_fxd_vhf_vhf_rx

Script started on Wed Feb 05 11:17:49 2003

[51] [aatt-temp2] >./fxd_vhf_recv

Fixed station - VHF Receive

Script started - Wed Feb 5 11:17:57 EST 2003

TTCP PERFORMANCE

Mode ----- TCP - Receive
Packet Size ----- 8192 bytes
Number of Packets ----- 2048
REAL Buffer Size ----- 8760 bytes
Connection from ----- 139.88.12.31 (mobile-pc2)
Throughput ----- 0.01 (Mbits/sec)

Elapsed time: 221.41 seconds CPU usage: 0%
Received: 300 pkts

Server listening on TCP port 5001
TCP window size: 8.0 KByte (default)

[4] local 139.88.20.33 port 5001 connected with 139.88.12.31 port 32811

[ID]	Interval	Transfer	Bandwidth
[4]	0.0- 5.1 sec	9.4 KBytes	14.7 Kbits/sec
[4]	5.1-10.2 sec	9.4 KBytes	14.8 Kbits/sec
[4]	10.2-15.3 sec	9.4 KBytes	14.8 Kbits/sec
[4]	15.3-20.4 sec	9.4 KBytes	14.8 Kbits/sec
[4]	20.4-25.5 sec	9.4 KBytes	14.8 Kbits/sec
[4]	25.5-30.2 sec	8.9 KBytes	14.9 Kbits/sec
[4]	30.2-35.3 sec	9.4 KBytes	14.8 Kbits/sec
[4]	35.3-40.4 sec	9.4 KBytes	14.8 Kbits/sec
[4]	40.4-45.5 sec	9.4 KBytes	14.8 Kbits/sec
[4]	45.5-50.6 sec	9.4 KBytes	14.8 Kbits/sec
[4]	50.6-55.7 sec	9.4 KBytes	14.8 Kbits/sec
[4]	55.7-60.4 sec	8.9 KBytes	14.9 Kbits/sec
[4]	60.4-65.6 sec	9.4 KBytes	14.7 Kbits/sec
[4]	65.6-70.6 sec	9.4 KBytes	14.9 Kbits/sec
[4]	70.6-75.7 sec	9.4 KBytes	14.8 Kbits/sec
[4]	75.7-80.0 sec	8.0 KBytes	14.8 Kbits/sec
[4]	80.0-85.1 sec	9.4 KBytes	14.8 Kbits/sec
[4]	85.1-90.2 sec	9.4 KBytes	14.8 Kbits/sec
[4]	90.2-95.7 sec	10.3 KBytes	14.8 Kbits/sec
[4]	95.7-100.1 sec	8.0 KBytes	14.8 Kbits/sec

[ID]	Interval	Transfer	Bandwidth
[4]	100.1-105.1 sec	9.4 KBytes	14.8 Kbits/sec
[4]	105.1-110.3 sec	9.4 KBytes	14.7 Kbits/sec
[4]	110.3-115.3 sec	9.4 KBytes	14.8 Kbits/sec
[4]	115.3-120.4 sec	9.4 KBytes	14.8 Kbits/sec
[4]	120.4-125.2 sec	8.9 KBytes	14.9 Kbits/sec
[4]	125.2-130.3 sec	9.4 KBytes	14.8 Kbits/sec
[4]	130.3-135.4 sec	9.4 KBytes	14.8 Kbits/sec
[4]	135.4-140.5 sec	9.4 KBytes	14.8 Kbits/sec
[4]	140.5-145.5 sec	9.4 KBytes	14.8 Kbits/sec
[4]	145.5-150.6 sec	9.4 KBytes	14.8 Kbits/sec
[4]	150.6-155.4 sec	8.9 KBytes	14.8 Kbits/sec
[4]	155.4-160.5 sec	9.4 KBytes	14.8 Kbits/sec
[4]	160.5-165.6 sec	9.4 KBytes	14.8 Kbits/sec
[4]	165.6-170.7 sec	9.4 KBytes	14.8 Kbits/sec
[4]	170.7-175.8 sec	9.4 KBytes	14.8 Kbits/sec
[4]	175.8-180.1 sec	8.0 KBytes	14.8 Kbits/sec
[4]	180.1-185.2 sec	9.4 KBytes	14.8 Kbits/sec
[4]	185.2-190.7 sec	10.3 KBytes	14.8 Kbits/sec
[4]	190.7-195.0 sec	8.0 KBytes	14.8 Kbits/sec
[4]	195.0-200.1 sec	9.4 KBytes	14.8 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	200.1-205.2 sec	9.4 KBytes	14.8 Kbits/sec
[4]	205.2-210.3 sec	9.4 KBytes	14.8 Kbits/sec
[4]	210.3-215.4 sec	9.4 KBytes	14.8 Kbits/sec
[4]	215.4-220.2 sec	8.9 KBytes	14.8 Kbits/sec
[4]	220.2-225.3 sec	9.4 KBytes	14.8 Kbits/sec
[4]	225.3-230.3 sec	9.4 KBytes	14.8 Kbits/sec
[4]	230.3-235.4 sec	9.4 KBytes	14.8 Kbits/sec
[4]	235.4-240.5 sec	9.4 KBytes	14.8 Kbits/sec
[4]	240.5-245.6 sec	9.4 KBytes	14.8 Kbits/sec
[4]	245.6-250.4 sec	8.9 KBytes	14.8 Kbits/sec
[4]	0.0-250.4 sec	464 KBytes	14.8 Kbits/sec

exit

^C

Script ended - Wed Feb 5 11:27:39 EST 2003

[52] [aatt-temp2] >exit

exit

script done on Wed Feb 05 11:27:40 2003

feb_05_fxd_vhf_vhf_tx

Script started on Wed Feb 05 11:07:57 2003
[51] [aatt-temp2] >./fxd_vhf_send mobile-pc2

Fixed station - VHF Transmit

Script started - Wed Feb 5 11:08:13 EST 2003

Starting Pings

PING mobile-pc2: 56 data bytes

64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=183. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=132. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=131. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=131. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=131. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=131. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=131. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=131. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=131. ms
64 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=131. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss
round-trip (ms) min/avg/max = 131/136/183

PING mobile-pc2: 504 data bytes

512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=764. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=607. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=607. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=607. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=607. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=607. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=606. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=607. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=607. ms
512 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=657. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss
round-trip (ms) min/avg/max = 606/627/764

PING mobile-pc2: 1016 data bytes

1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=1307. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=1152. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=1169. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=1151. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=1152. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=1151. ms

1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=1151. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=1153. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=1151. ms
1024 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=1151. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 1151/1168/1307

PING mobile-pc2: 1392 data bytes

1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=1709. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=1551. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=1552. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=1553. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=1552. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=1553. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=1553. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=1553. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=1553. ms
1400 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=1553. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 1551/1568/1709

PING mobile-pc2: 1442 data bytes

1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=1764. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=1607. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=1606. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=1607. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=1606. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=1607. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=1606. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=1607. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=1607. ms
1450 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=1605. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 1605/1622/1764

PING mobile-pc2: 2040 data bytes

2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=2422. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=2536. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=2698. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=2861. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=3022. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=3183. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=3345. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=3506. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=8. time=3667. ms
2048 bytes from mobile-pc2 (139.88.12.31): icmp_seq=9. time=3849. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 2422/3108/3849

PING mobile-pc2: 4088 data bytes

4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=0. time=4963. ms

4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=1. time=6180. ms

4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=2. time=7396. ms

4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=3. time=8615. ms

4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=4. time=9863. ms

4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=5. time=11124. ms

4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=6. time=12385. ms

4096 bytes from mobile-pc2 (139.88.12.31): icmp_seq=7. time=13650. ms

----mobile-pc2 PING Statistics----

10 packets transmitted, 8 packets received, 20% packet loss

round-trip (ms) min/avg/max = 4963/9272/13650

Starting TTCP

TTCP PERFORMANCE

Mode ----- TCP - Transmit

Packet Size ----- 8192 bytes

Number of Packets ----- 50

REAL Buffer Size ----- 8192 bytes

Connection made to ----- 139.88.12.31 (mobile-pc2)

Throughput 0.01 (Mbits/sec)

Elapsed time: 213.97 seconds CPU usage: 0%

Xmit: 0.23 pkts/sec

Sleeping for 15 seconds

Starting IPerf

Client connecting to mobile-pc2, TCP port 5001

TCP window size: 8.0 KByte (default)

[4] local 139.88.20.33 port 32811 connected with 139.88.12.31 port 5001

[ID]	Interval	Transfer	Bandwidth
-------	----------	----------	-----------

[4]	0.0- 5.4 sec	24.0 KBytes	35.4 Kbits/sec
------	--------------	-------------	----------------

[4]	5.4-14.1 sec	16.0 KBytes	14.7 Kbits/sec
------	--------------	-------------	----------------

[4]	14.1-18.4 sec	8.0 KBytes	14.7 Kbits/sec
------	---------------	------------	----------------

[4]	18.4-22.8 sec	8.0 KBytes	14.6 Kbits/sec
------	---------------	------------	----------------

[4]	22.8-27.2 sec	8.0 KBytes	14.7 Kbits/sec
------	---------------	------------	----------------

[4]	27.2-31.5 sec	8.0 KBytes	14.7 Kbits/sec
[4]	31.5-35.9 sec	8.0 KBytes	14.7 Kbits/sec
[4]	35.9-40.2 sec	8.0 KBytes	14.7 Kbits/sec
[4]	40.2-48.9 sec	16.0 KBytes	14.8 Kbits/sec
[4]	48.9-53.2 sec	8.0 KBytes	14.7 Kbits/sec
[4]	53.2-57.6 sec	8.0 KBytes	14.7 Kbits/sec
[4]	57.6-61.9 sec	8.0 KBytes	14.7 Kbits/sec
[4]	61.9-66.3 sec	8.0 KBytes	14.7 Kbits/sec
[4]	66.3-70.6 sec	8.0 KBytes	14.6 Kbits/sec
[4]	70.6-79.3 sec	16.0 KBytes	14.8 Kbits/sec
[4]	79.3-83.6 sec	8.0 KBytes	14.7 Kbits/sec
[4]	83.6-88.0 sec	8.0 KBytes	14.7 Kbits/sec
[4]	88.0-92.4 sec	8.0 KBytes	14.6 Kbits/sec
[4]	92.4-96.7 sec	8.0 KBytes	14.7 Kbits/sec
[4]	96.7-101.1 sec	8.0 KBytes	14.7 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	101.1-105.4 sec	8.0 KBytes	14.7 Kbits/sec
[4]	105.4-114.1 sec	16.0 KBytes	14.7 Kbits/sec
[4]	114.1-118.5 sec	8.0 KBytes	14.7 Kbits/sec
[4]	118.5-122.8 sec	8.0 KBytes	14.7 Kbits/sec
[4]	122.8-127.2 sec	8.0 KBytes	14.7 Kbits/sec
[4]	127.2-131.5 sec	8.0 KBytes	14.7 Kbits/sec
[4]	131.5-135.9 sec	8.0 KBytes	14.6 Kbits/sec
[4]	135.9-140.2 sec	8.0 KBytes	14.7 Kbits/sec
[4]	140.2-148.9 sec	16.0 KBytes	14.8 Kbits/sec
[4]	148.9-153.2 sec	8.0 KBytes	14.7 Kbits/sec
[4]	153.2-157.6 sec	8.0 KBytes	14.6 Kbits/sec
[4]	157.6-162.0 sec	8.0 KBytes	14.7 Kbits/sec
[4]	162.0-166.3 sec	8.0 KBytes	14.7 Kbits/sec
[4]	166.3-170.7 sec	8.0 KBytes	14.7 Kbits/sec
[4]	170.7-175.0 sec	8.0 KBytes	14.7 Kbits/sec
[4]	175.0-183.7 sec	16.0 KBytes	14.7 Kbits/sec
[4]	183.7-188.0 sec	8.0 KBytes	14.7 Kbits/sec
[4]	188.0-192.4 sec	8.0 KBytes	14.7 Kbits/sec
[4]	192.4-196.7 sec	8.0 KBytes	14.7 Kbits/sec
[4]	196.7-201.1 sec	8.0 KBytes	14.6 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	201.1-205.4 sec	8.0 KBytes	14.7 Kbits/sec
[4]	205.4-214.1 sec	16.0 KBytes	14.8 Kbits/sec
[4]	214.1-218.5 sec	8.0 KBytes	14.7 Kbits/sec
[4]	218.5-222.8 sec	8.0 KBytes	14.6 Kbits/sec
[4]	222.8-227.2 sec	8.0 KBytes	14.7 Kbits/sec
[4]	227.2-231.5 sec	8.0 KBytes	14.7 Kbits/sec
[4]	231.5-235.9 sec	8.0 KBytes	14.7 Kbits/sec
[4]	235.9-240.2 sec	8.0 KBytes	14.7 Kbits/sec
[4]	0.0-248.1 sec	456 KBytes	14.7 Kbits/sec

Script ended - Wed Feb 5 11:17:36 EST 2003

[52] [aatt-temp2] >exit
exit

script done on Wed Feb 05 11:17:43 2003

feb_05_mob_sat_sat_rx

Script started on Wed Feb 05 09:53:33 2003

[51] [mobile-gw] >./mob_sat_recv

Mobile station - Satellite Receive

Script started - Wed Feb 5 09:53:41 EST 2003

TTCP PERFORMANCE

Mode ----- TCP - Receive
Packet Size ----- 16384 bytes
Number of Packets ----- 2048
Socket Buffer Size ----- 135000 bytes
REAL Buffer Size ----- 135780 bytes
Connection from ----- 139.88.20.33 (aatt-temp2)
Throughput ----- 1.77 (Mbits/sec)

Elapsed time: 36.25 seconds CPU usage: 0%

Received: 3008 pkts

Server listening on TCP port 5001

TCP window size: 132 KByte

[4] local 139.88.12.31 port 5001 connected with 139.88.20.33 port 32802

[ID]	Interval	Transfer	Bandwidth
[4]	0.0- 5.0 sec	318 KBytes	508 Kbits/sec
[4]	5.0-10.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	10.0-15.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	15.0-20.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	20.0-25.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	25.0-30.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	30.0-35.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	35.0-40.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	40.0-45.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	45.0-50.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	50.0-55.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	55.0-60.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	60.0-65.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	65.0-70.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	70.0-75.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	75.0-80.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	80.0-85.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	85.0-90.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	90.0-95.0 sec	1.2 MBytes	1.9 Mbits/sec

```

[ 4] 95.0-100.0 sec  1.2 MBytes  1.9 Mbits/sec
[ ID] Interval      Transfer    Bandwidth
[ 4] 100.0-105.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 105.0-110.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 110.0-115.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 115.0-120.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 120.0-125.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 125.0-130.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 130.0-135.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 135.0-140.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 140.0-145.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 145.0-150.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 150.0-155.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 155.0-160.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 160.0-165.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 165.0-170.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 170.0-175.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 175.0-180.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 180.0-185.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 185.0-190.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 190.0-195.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 195.0-200.0 sec  1.2 MBytes  1.9 Mbits/sec
[ ID] Interval      Transfer    Bandwidth
[ 4] 200.0-205.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 205.0-210.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 210.0-215.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 215.0-220.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 220.0-225.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 225.0-230.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 230.0-235.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4] 235.0-240.0 sec  1.2 MBytes  1.9 Mbits/sec
[ 4]  0.0-240.3 sec 56.8 MBytes  1.9 Mbits/sec

```

^C

Script ended - Wed Feb 5 09:59:19 EST 2003

```

[52] [mobile-gw] >exit
exit

```

script done on Wed Feb 05 09:59:30 2003

feb_05_mob_sat_sat_tx

Script started on Wed Feb 05 09:59:38 2003

[51] [mobile-gw] >./mob_sat_send aatt-temp2

Mobile station - Satellite Transmit

Script started - Wed Feb 5 10:00:33 EST 2003

Starting Pings

PING aatt-temp2: 56 data bytes

64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=515. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=515. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=515. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=515. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=515. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=515. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=515. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=515. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=515. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=515. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 515/515/515

PING aatt-temp2: 504 data bytes

512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=532. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=532. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=532. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=532. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=532. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=532. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=532. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=532. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=532. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=532. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 532/532/532

PING aatt-temp2: 1016 data bytes

1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=553. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=553. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=553. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=553. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=553. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=553. ms

1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=553. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=553. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=553. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=553. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 553/553/553

PING aatt-temp2: 1392 data bytes

1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=568. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=568. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=568. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=568. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=568. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=568. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=568. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=568. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=568. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=568. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 568/568/568

PING aatt-temp2: 1442 data bytes

1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=570. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=570. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=570. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=570. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=570. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=570. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=570. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=570. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=570. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=570. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 570/570/570

PING aatt-temp2: 2040 data bytes

2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=593. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=593. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=592. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=593. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=593. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=593. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=593. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=592. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=593. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=592. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss
round-trip (ms) min/avg/max = 592/592/593

PING aatt-temp2: 4088 data bytes

4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=669. ms
4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=669. ms
4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=669. ms
4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=669. ms
4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=669. ms
4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=669. ms
4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=669. ms
4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=669. ms
4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=669. ms
4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=669. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss
round-trip (ms) min/avg/max = 669/669/669

Starting TTCP

TTCP PERFORMANCE

Mode ----- TCP - Transmit
Packet Size ----- 16384 bytes
Number of Packets ----- 500
Socket Buffer Size ----- 135000 bytes
REAL Buffer Size ----- 135000 bytes
Connection made to ----- 139.88.20.33 (aatt-temp2)
Throughput 0.23 (Mbits/sec)

Elapsed time: 273.81 seconds CPU usage: 0%
Xmit: 1.83 pkts/sec

Sleeping for 15 seconds

Starting IPerf

Client connecting to aatt-temp2, TCP port 5001
TCP window size: 132 KByte

[4] local 139.88.12.31 port 32801 connected with 139.88.20.33 port 5001
[ID] Interval Transfer Bandwidth
[4] 0.0- 7.8 sec 272 KBytes 277 Kbits/sec
[4] 7.8-11.1 sec 136 KBytes 333 Kbits/sec

[4]	11.1-28.5 sec	136 KBytes	62.5 Kbits/sec
[4]	28.5-28.5 sec	8.0 KBytes	256 Mbits/sec
[4]	28.5-28.5 sec	8.0 KBytes	398 Mbits/sec
[4]	28.5-32.8 sec	112 KBytes	207 Kbits/sec
[4]	32.8-37.1 sec	136 KBytes	255 Kbits/sec
[4]	37.1-41.4 sec	128 KBytes	238 Kbits/sec
[4]	41.4-45.7 sec	136 KBytes	252 Kbits/sec
[4]	45.7-50.0 sec	128 KBytes	240 Kbits/sec
[4]	50.0-58.6 sec	264 KBytes	245 Kbits/sec
[4]	58.6-63.0 sec	136 KBytes	249 Kbits/sec
[4]	63.0-67.3 sec	136 KBytes	252 Kbits/sec
[4]	67.3-71.7 sec	128 KBytes	235 Kbits/sec
[4]	71.7-76.0 sec	136 KBytes	252 Kbits/sec
[4]	76.0-80.3 sec	128 KBytes	240 Kbits/sec
[4]	80.3-89.0 sec	272 KBytes	251 Kbits/sec
[4]	89.0-93.3 sec	128 KBytes	238 Kbits/sec
[4]	93.3-97.6 sec	136 KBytes	248 Kbits/sec
[4]	97.6-101.9 sec	136 KBytes	253 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	101.9-106.3 sec	128 KBytes	234 Kbits/sec
[4]	106.3-110.7 sec	136 KBytes	247 Kbits/sec
[4]	110.7-115.0 sec	136 KBytes	255 Kbits/sec
[4]	115.0-123.7 sec	264 KBytes	243 Kbits/sec
[4]	123.7-128.0 sec	128 KBytes	238 Kbits/sec
[4]	128.0-132.4 sec	136 KBytes	248 Kbits/sec
[4]	132.4-136.7 sec	136 KBytes	253 Kbits/sec
[4]	136.7-141.1 sec	128 KBytes	234 Kbits/sec
[4]	141.1-145.4 sec	136 KBytes	253 Kbits/sec
[4]	145.4-154.0 sec	264 KBytes	246 Kbits/sec
[4]	154.0-158.3 sec	128 KBytes	238 Kbits/sec
[4]	158.3-162.6 sec	136 KBytes	248 Kbits/sec
[4]	162.6-167.0 sec	136 KBytes	253 Kbits/sec
[4]	167.0-173.1 sec	128 KBytes	166 Kbits/sec
[4]	173.1-177.4 sec	136 KBytes	255 Kbits/sec
[4]	177.4-181.7 sec	128 KBytes	238 Kbits/sec
[4]	181.7-186.0 sec	136 KBytes	252 Kbits/sec
[4]	186.0-190.3 sec	128 KBytes	240 Kbits/sec
[4]	190.3-199.0 sec	272 KBytes	251 Kbits/sec
[4]	199.0-203.3 sec	136 KBytes	253 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	203.3-207.7 sec	128 KBytes	234 Kbits/sec
[4]	207.7-212.0 sec	136 KBytes	253 Kbits/sec
[4]	212.0-216.3 sec	128 KBytes	237 Kbits/sec
[4]	216.3-220.5 sec	136 KBytes	255 Kbits/sec
[4]	220.5-229.2 sec	264 KBytes	245 Kbits/sec
[4]	229.2-233.4 sec	128 KBytes	240 Kbits/sec
[4]	233.4-237.7 sec	136 KBytes	253 Kbits/sec
[4]	237.7-242.1 sec	128 KBytes	237 Kbits/sec
[4]	0.0-244.6 sec	6.9 MBytes	230 Kbits/sec

```
Script ended - Wed Feb 5 10:10:35 EST 2003  
[52] [mobile-gw] >exit  
exit
```

```
script done on Wed Feb 05 10:10:44 2003
```

feb_05_mob_sat_vhf_rx

[55] [mobile-gw] >./mot_sat_recv

Mobile station - VHF Receive

Script started - Wed Feb 5 10:44:35 EST 2003

TTCP PERFORMANCE

Mode ----- TCP - Receive
Packet Size ----- 8192 bytes
Number of Packets ----- 2048
REAL Buffer Size ----- 8760 bytes
Connection from ----- 139.88.20.33 (aatt-temp2)
Throughput ----- 0.01 (Mbits/sec)

Elapsed time: 225.40 seconds CPU usage: 0%
Received: 300 pkts

Server listening on TCP port 5001
TCP window size: 8.0 KByte (default)

[4] local 139.88.12.31 port 5001 connected with 139.88.20.33 port 32809

[ID]	Interval	Transfer	Bandwidth
[4]	0.0- 5.3 sec	9.4 KBytes	14.2 Kbits/sec
[4]	5.3-10.5 sec	9.4 KBytes	14.5 Kbits/sec
[4]	10.5-15.7 sec	9.4 KBytes	14.5 Kbits/sec
[4]	15.7-20.1 sec	8.0 KBytes	14.5 Kbits/sec
[4]	20.1-25.3 sec	9.4 KBytes	14.5 Kbits/sec
[4]	25.3-30.5 sec	9.4 KBytes	14.5 Kbits/sec
[4]	30.5-35.4 sec	8.9 KBytes	14.6 Kbits/sec
[4]	35.4-40.6 sec	9.4 KBytes	14.5 Kbits/sec
[4]	40.6-45.8 sec	9.4 KBytes	14.6 Kbits/sec
[4]	45.8-50.2 sec	8.0 KBytes	14.5 Kbits/sec
[4]	50.2-55.4 sec	9.4 KBytes	14.5 Kbits/sec
[4]	55.4-60.6 sec	9.4 KBytes	14.5 Kbits/sec
[4]	60.6-65.7 sec	9.4 KBytes	14.6 Kbits/sec
[4]	65.7-70.1 sec	8.0 KBytes	14.5 Kbits/sec
[4]	70.1-75.0 sec	8.9 KBytes	14.5 Kbits/sec
[4]	75.0-80.2 sec	9.4 KBytes	14.6 Kbits/sec
[4]	80.2-85.4 sec	9.4 KBytes	14.5 Kbits/sec
[4]	85.4-90.6 sec	9.4 KBytes	14.6 Kbits/sec
[4]	90.6-95.0 sec	8.0 KBytes	14.5 Kbits/sec
[4]	95.0-100.2 sec	9.4 KBytes	14.6 Kbits/sec
[ID]	Interval	Transfer	Bandwidth

[4]	100.2-105.4 sec	9.4 KBytes	14.5 Kbits/sec
[4]	105.4-110.3 sec	8.9 KBytes	14.5 Kbits/sec
[4]	110.3-115.5 sec	9.4 KBytes	14.5 Kbits/sec
[4]	115.5-120.7 sec	9.4 KBytes	14.6 Kbits/sec
[4]	120.7-125.1 sec	8.0 KBytes	14.5 Kbits/sec
[4]	125.1-130.2 sec	9.4 KBytes	14.6 Kbits/sec
[4]	130.2-135.4 sec	9.4 KBytes	14.5 Kbits/sec
[4]	135.4-140.6 sec	9.4 KBytes	14.6 Kbits/sec
[4]	140.6-145.0 sec	8.0 KBytes	14.5 Kbits/sec
[4]	145.0-150.7 sec	10.3 KBytes	14.6 Kbits/sec
[4]	150.7-155.1 sec	8.0 KBytes	14.5 Kbits/sec
[4]	155.1-160.3 sec	9.4 KBytes	14.6 Kbits/sec
[4]	160.3-165.5 sec	9.4 KBytes	14.5 Kbits/sec
[4]	165.5-170.7 sec	9.4 KBytes	14.5 Kbits/sec
[4]	170.7-175.1 sec	8.0 KBytes	14.5 Kbits/sec
[4]	175.1-180.3 sec	9.4 KBytes	14.6 Kbits/sec
[4]	180.3-185.2 sec	8.9 KBytes	14.5 Kbits/sec
[4]	185.2-190.3 sec	9.4 KBytes	14.6 Kbits/sec
[4]	190.3-195.5 sec	9.4 KBytes	14.5 Kbits/sec
[4]	195.5-200.7 sec	9.4 KBytes	14.6 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	200.7-205.1 sec	8.0 KBytes	14.5 Kbits/sec
[4]	205.1-210.3 sec	9.4 KBytes	14.5 Kbits/sec
[4]	210.3-215.5 sec	9.4 KBytes	14.5 Kbits/sec
[4]	215.5-220.4 sec	8.9 KBytes	14.6 Kbits/sec
[4]	220.4-225.6 sec	9.4 KBytes	14.5 Kbits/sec
[4]	225.6-230.8 sec	9.4 KBytes	14.6 Kbits/sec
[4]	230.8-235.2 sec	8.0 KBytes	14.4 Kbits/sec
[4]	235.2-240.4 sec	9.4 KBytes	14.6 Kbits/sec
[4]	240.4-245.6 sec	9.4 KBytes	14.5 Kbits/sec
[4]	245.6-250.7 sec	9.4 KBytes	14.6 Kbits/sec
[4]	0.0-251.2 sec	456 KBytes	14.5 Kbits/sec

^C

Script ended - Wed Feb 5 10:54:11 EST 2003

[56] [mobile-gw] >exit
exit

script done on Wed Feb 05 10:54:18 2003

feb_05_mob_sat_vhf_tx

Script started on Wed Feb 05 10:54:51 2003
[51] [mobile-gw] >./mob_sat_send aatt-temp2

Mobile station - Satellite Transmit

Script started - Wed Feb 5 10:55:06 EST 2003

Starting Pings

PING aatt-temp2: 56 data bytes

64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=322. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=341. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=322. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=341. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=322. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=342. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=322. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=342. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=322. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=342. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss
round-trip (ms) min/avg/max = 322/331/342

PING aatt-temp2: 504 data bytes

512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=575. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=576. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=575. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=575. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=576. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=575. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=575. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=575. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=575. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=575. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss
round-trip (ms) min/avg/max = 575/575/576

PING aatt-temp2: 1016 data bytes

1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=865. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=865. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=865. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=865. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=865. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=865. ms

1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=865. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=865. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=866. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=866. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 865/865/866

PING aatt-temp2: 1392 data bytes

1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=1078. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=1078. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=1078. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=1078. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=1078. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=1078. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=1078. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=1077. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=1078. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=1078. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 1077/1077/1078

PING aatt-temp2: 1442 data bytes

1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=1107. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=1107. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=1107. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=1107. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=1107. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=1107. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=1108. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=1108. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=1107. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=1107. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 1107/1107/1108

PING aatt-temp2: 2040 data bytes

2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=1456. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=1635. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=1749. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=2024. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=2146. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=2269. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=2448. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=2559. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=2835. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=2958. ms

```

----aatt-temp2 PING Statistics----
10 packets transmitted, 10 packets received, 0% packet loss
round-trip (ms)  min/avg/max = 1456/2207/2958
PING aatt-temp2: 4088 data bytes
4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=2706. ms
4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=4229. ms
4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=5460. ms
4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=6697. ms
4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=8135. ms
4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=9485. ms
4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=10733. ms

```

```

----aatt-temp2 PING Statistics----
10 packets transmitted, 7 packets received, 30% packet loss
round-trip (ms)  min/avg/max = 2706/6777/10733

```

Starting TTCP

TTCP PERFORMANCE

```

Mode ----- TCP - Transmit
Packet Size ----- 16384 bytes
Number of Packets ----- 500
Socket Buffer Size ----- 135000 bytes
REAL Buffer Size ----- 135000 bytes
Connection made to ----- 139.88.20.33 (aatt-temp2)
Throughput ..... 0.24 (Mbits/sec)

```

```

Elapsed time: 270.19 seconds    CPU usage:    0%
Xmit: 1.85 pkts/sec

```

Sleeping for 15 seconds

Starting IPerf

```

-----
Client connecting to aatt-temp2, TCP port 5001
TCP window size: 132 KByte
-----

```

```

[  4] local 139.88.12.31 port 32808 connected with 139.88.20.33 port 5001
[ ID] Interval      Transfer      Bandwidth
[  4] 0.0- 6.7 sec    272 KBytes    326 Kbits/sec
[  4] 6.7-18.0 sec    136 KBytes    96.0 Kbits/sec
[  4] 18.0-18.0 sec    8.0 KBytes    259 Mbits/sec
[  4] 18.0-23.1 sec    128 KBytes    202 Kbits/sec
[  4] 23.1-27.4 sec    128 KBytes    237 Kbits/sec

```

[4]	27.4-31.7 sec	136 KBytes	255 Kbits/sec
[4]	31.7-36.0 sec	128 KBytes	238 Kbits/sec
[4]	36.0-40.3 sec	136 KBytes	252 Kbits/sec
[4]	40.3-49.0 sec	264 KBytes	243 Kbits/sec
[4]	49.0-53.4 sec	136 KBytes	249 Kbits/sec
[4]	53.4-57.7 sec	128 KBytes	237 Kbits/sec
[4]	57.7-62.0 sec	136 KBytes	255 Kbits/sec
[4]	62.0-66.3 sec	128 KBytes	238 Kbits/sec
[4]	66.3-70.6 sec	136 KBytes	252 Kbits/sec
[4]	70.6-79.2 sec	264 KBytes	246 Kbits/sec
[4]	79.2-83.5 sec	136 KBytes	248 Kbits/sec
[4]	83.5-87.9 sec	128 KBytes	238 Kbits/sec
[4]	87.9-92.2 sec	136 KBytes	248 Kbits/sec
[4]	92.2-96.5 sec	136 KBytes	253 Kbits/sec
[4]	96.5-100.9 sec	128 KBytes	234 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	100.9-105.4 sec	136 KBytes	244 Kbits/sec
[4]	105.4-114.0 sec	264 KBytes	244 Kbits/sec
[4]	114.0-118.3 sec	136 KBytes	255 Kbits/sec
[4]	118.3-122.6 sec	128 KBytes	238 Kbits/sec
[4]	122.6-127.0 sec	136 KBytes	248 Kbits/sec
[4]	127.0-131.3 sec	136 KBytes	253 Kbits/sec
[4]	131.3-137.3 sec	128 KBytes	172 Kbits/sec
[4]	137.3-141.6 sec	136 KBytes	253 Kbits/sec
[4]	141.6-145.9 sec	128 KBytes	237 Kbits/sec
[4]	145.9-150.2 sec	136 KBytes	255 Kbits/sec
[4]	150.2-158.9 sec	264 KBytes	243 Kbits/sec
[4]	158.9-163.2 sec	136 KBytes	253 Kbits/sec
[4]	163.2-167.6 sec	136 KBytes	248 Kbits/sec
[4]	167.6-171.9 sec	128 KBytes	238 Kbits/sec
[4]	171.9-176.2 sec	136 KBytes	252 Kbits/sec
[4]	176.2-180.5 sec	136 KBytes	255 Kbits/sec
[4]	180.5-189.1 sec	264 KBytes	243 Kbits/sec
[4]	189.1-193.4 sec	128 KBytes	238 Kbits/sec
[4]	193.4-197.8 sec	136 KBytes	252 Kbits/sec
[4]	197.8-202.0 sec	128 KBytes	240 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	202.0-206.5 sec	136 KBytes	246 Kbits/sec
[4]	206.5-210.7 sec	136 KBytes	255 Kbits/sec
[4]	210.7-215.1 sec	128 KBytes	232 Kbits/sec
[4]	215.1-223.7 sec	264 KBytes	246 Kbits/sec
[4]	223.7-228.1 sec	136 KBytes	252 Kbits/sec
[4]	228.1-232.3 sec	128 KBytes	240 Kbits/sec
[4]	232.3-236.6 sec	136 KBytes	253 Kbits/sec
[4]	236.6-241.0 sec	128 KBytes	237 Kbits/sec
[4]	0.0-243.8 sec	7.0 MBytes	235 Kbits/sec

Script ended - Wed Feb 5 11:05:16 EST 2003

[52] [mobile-gw] >exit
exit

script done on Wed Feb 05 11:05:26 2003

feb_05_mob_vhf_sat_rx

Script started on Wed Feb 05 10:13:26 2003

[51] [mobile-gw] >./mob_sat_recv

Mobile station - Satellite Receive

Script started - Wed Feb 5 10:13:49 EST 2003

TTCP PERFORMANCE

Mode ----- TCP - Receive
Packet Size ----- 16384 bytes
Number of Packets ----- 2048
Socket Buffer Size ----- 135000 bytes
REAL Buffer Size ----- 135780 bytes
Connection from ----- 139.88.20.33 (aatt-temp2)
Throughput ----- 0.93 (Mbits/sec)

Elapsed time: 68.70 seconds CPU usage: 0%

Received: 3241 pkts

Server listening on TCP port 5001

TCP window size: 132 KByte

[4] local 139.88.12.31 port 5001 connected with 139.88.20.33 port 32804

[ID]	Interval	Transfer	Bandwidth
[4]	0.0- 5.0 sec	750 KBytes	1.2 Mbits/sec
[4]	5.0-10.0 sec	888 KBytes	1.4 Mbits/sec
[4]	10.0-15.0 sec	756 KBytes	1.2 Mbits/sec
[4]	15.0-20.0 sec	777 KBytes	1.2 Mbits/sec
[4]	20.0-25.0 sec	775 KBytes	1.2 Mbits/sec
[4]	25.0-30.0 sec	764 KBytes	1.2 Mbits/sec
[4]	30.0-35.0 sec	781 KBytes	1.2 Mbits/sec
[4]	35.0-40.0 sec	789 KBytes	1.2 Mbits/sec
[4]	40.0-45.0 sec	782 KBytes	1.2 Mbits/sec
[4]	45.0-50.0 sec	857 KBytes	1.3 Mbits/sec
[4]	50.0-55.0 sec	777 KBytes	1.2 Mbits/sec
[4]	55.0-60.0 sec	753 KBytes	1.2 Mbits/sec
[4]	60.0-65.0 sec	755 KBytes	1.2 Mbits/sec
[4]	65.0-70.0 sec	796 KBytes	1.2 Mbits/sec
[4]	70.0-75.0 sec	772 KBytes	1.2 Mbits/sec
[4]	75.0-80.0 sec	788 KBytes	1.2 Mbits/sec
[4]	80.0-85.0 sec	796 KBytes	1.2 Mbits/sec
[4]	85.0-90.0 sec	791 KBytes	1.2 Mbits/sec
[4]	90.0-95.0 sec	819 KBytes	1.3 Mbits/sec

[ID]	Interval	Transfer	Bandwidth
[4]	95.0-100.0 sec	813 KBytes	1.3 Mb/s
[4]	100.0-105.0 sec	857 KBytes	1.3 Mb/s
[4]	105.0-110.0 sec	791 KBytes	1.2 Mb/s
[4]	110.0-115.0 sec	807 KBytes	1.3 Mb/s
[4]	115.0-120.0 sec	803 KBytes	1.3 Mb/s
[4]	120.0-125.0 sec	793 KBytes	1.2 Mb/s
[4]	125.0-130.0 sec	759 KBytes	1.2 Mb/s
[4]	130.0-135.0 sec	781 KBytes	1.2 Mb/s
[4]	135.0-140.0 sec	764 KBytes	1.2 Mb/s
[4]	140.0-145.0 sec	784 KBytes	1.2 Mb/s
[4]	145.0-150.0 sec	804 KBytes	1.3 Mb/s
[4]	150.0-155.0 sec	803 KBytes	1.3 Mb/s
[4]	155.0-160.0 sec	791 KBytes	1.2 Mb/s
[4]	160.0-165.0 sec	768 KBytes	1.2 Mb/s
[4]	165.0-170.0 sec	821 KBytes	1.3 Mb/s
[4]	170.0-175.0 sec	784 KBytes	1.2 Mb/s
[4]	175.0-180.0 sec	785 KBytes	1.2 Mb/s
[4]	180.0-185.0 sec	828 KBytes	1.3 Mb/s
[4]	185.0-190.0 sec	781 KBytes	1.2 Mb/s
[4]	190.0-195.0 sec	807 KBytes	1.3 Mb/s
[4]	195.0-200.0 sec	739 KBytes	1.2 Mb/s
[ID]	Interval	Transfer	Bandwidth
[4]	200.0-205.0 sec	752 KBytes	1.2 Mb/s
[4]	205.0-210.0 sec	752 KBytes	1.2 Mb/s
[4]	210.0-215.0 sec	819 KBytes	1.3 Mb/s
[4]	215.0-220.0 sec	778 KBytes	1.2 Mb/s
[4]	220.0-225.0 sec	831 KBytes	1.3 Mb/s
[4]	225.0-230.0 sec	750 KBytes	1.2 Mb/s
[4]	230.0-235.0 sec	775 KBytes	1.2 Mb/s
[4]	235.0-240.0 sec	755 KBytes	1.2 Mb/s
[4]	0.0-240.2 sec	37.0 MBytes	1.2 Mb/s

^C

Script ended - Wed Feb 5 10:21:46 EST 2003

[52] [mobile-gw] >exit
exit

script done on Wed Feb 05 10:21:48 2003

feb_05_mob_vhf_sat_tx

Script started on Wed Feb 05 10:22:22 2003

[51] [mobile-gw] >./mob_vhf_send aatt-temp2

Mobile station - VHF Transmit

Script started - Wed Feb 5 10:23:08 EST 2003

Starting Pings

PING aatt-temp2: 56 data bytes

64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=324. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=324. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=324. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=324. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=324. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=324. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=324. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=324. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=324. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=324. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 324/324/324

PING aatt-temp2: 504 data bytes

512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=564. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=599. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=600. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=599. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=600. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=600. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=599. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=600. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=600. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=600. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 564/596/600

PING aatt-temp2: 1016 data bytes

1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=906. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=906. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=906. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=905. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=906. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=905. ms

1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=906. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=906. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=906. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=906. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 905/905/906

PING aatt-temp2: 1392 data bytes

1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=1139. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=1041. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=1139. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=1041. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=1139. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=1042. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=1139. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=1041. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=1138. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=1042. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 1041/1090/1139

PING aatt-temp2: 1442 data bytes

1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=1166. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=1176. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=1167. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=1174. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=1167. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=1174. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=1166. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=1173. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=1166. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=1172. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 1166/1170/1176

PING aatt-temp2: 2040 data bytes

2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=1551. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=1680. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=1842. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=2068. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=2205. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=2318. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=2450. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=2612. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=2734. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=2897. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 1551/2235/2897

PING aatt-temp2: 4088 data bytes

4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=2706. ms

4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=3941. ms

4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=5347. ms

4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=6786. ms

4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=8137. ms

4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=9441. ms

4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=10959. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 7 packets received, 30% packet loss

round-trip (ms) min/avg/max = 2706/6759/10959

Starting TTCP

TTCP PERFORMANCE

Mode ----- TCP - Transmit

Packet Size ----- 8192 bytes

Number of Packets ----- 50

REAL Buffer Size ----- 8192 bytes

Connection made to ----- 139.88.20.33 (aatt-temp2)

Throughput 0.01 (Mbits/sec)

Elapsed time: 221.26 seconds CPU usage: 0%

Xmit: 0.23 pkts/sec

Sleeping for 15 seconds

Starting IPerf

Client connecting to aatt-temp2, TCP port 5001

TCP window size: 8.0 KByte (default)

[4] local 139.88.12.31 port 32804 connected with 139.88.20.33 port 5001

[ID]	Interval	Transfer	Bandwidth
-------	----------	----------	-----------

[4]	0.0- 5.6 sec	24.0 KBytes	34.5 Kbits/sec
------	--------------	-------------	----------------

[4]	5.6-14.3 sec	16.0 KBytes	14.6 Kbits/sec
------	--------------	-------------	----------------

[4]	14.3-18.7 sec	8.0 KBytes	14.7 Kbits/sec
------	---------------	------------	----------------

[4]	18.7-23.1 sec	8.0 KBytes	14.6 Kbits/sec
------	---------------	------------	----------------

[4]	23.1-27.4 sec	8.0 KBytes	14.6 Kbits/sec
------	---------------	------------	----------------

[4]	27.4-31.8 sec	8.0 KBytes	14.6 Kbits/sec
------	---------------	------------	----------------

[4]	31.8-36.2 sec	8.0 KBytes	14.6 Kbits/sec
[4]	36.2-40.6 sec	8.0 KBytes	14.7 Kbits/sec
[4]	40.6-49.3 sec	16.0 KBytes	14.6 Kbits/sec
[4]	49.3-53.7 sec	8.0 KBytes	14.6 Kbits/sec
[4]	53.7-58.0 sec	8.0 KBytes	14.6 Kbits/sec
[4]	58.0-62.4 sec	8.0 KBytes	14.6 Kbits/sec
[4]	62.4-66.8 sec	8.0 KBytes	14.7 Kbits/sec
[4]	66.8-71.1 sec	8.0 KBytes	14.7 Kbits/sec
[4]	71.1-75.5 sec	8.0 KBytes	14.7 Kbits/sec
[4]	75.5-84.3 sec	16.0 KBytes	14.6 Kbits/sec
[4]	84.3-88.6 sec	8.0 KBytes	14.7 Kbits/sec
[4]	88.6-93.0 sec	8.0 KBytes	14.6 Kbits/sec
[4]	93.0-97.4 sec	8.0 KBytes	14.7 Kbits/sec
[4]	97.4-101.7 sec	8.0 KBytes	14.6 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	101.7-106.1 sec	8.0 KBytes	14.6 Kbits/sec
[4]	106.1-110.5 sec	8.0 KBytes	14.6 Kbits/sec
[4]	110.5-119.2 sec	16.0 KBytes	14.6 Kbits/sec
[4]	119.2-123.6 sec	8.0 KBytes	14.7 Kbits/sec
[4]	123.6-128.0 sec	8.0 KBytes	14.6 Kbits/sec
[4]	128.0-132.3 sec	8.0 KBytes	14.6 Kbits/sec
[4]	132.3-136.7 sec	8.0 KBytes	14.7 Kbits/sec
[4]	136.7-141.1 sec	8.0 KBytes	14.6 Kbits/sec
[4]	141.1-145.4 sec	8.0 KBytes	14.7 Kbits/sec
[4]	145.4-154.2 sec	16.0 KBytes	14.6 Kbits/sec
[4]	154.2-158.5 sec	8.0 KBytes	14.6 Kbits/sec
[4]	158.5-162.9 sec	8.0 KBytes	14.6 Kbits/sec
[4]	162.9-167.3 sec	8.0 KBytes	14.7 Kbits/sec
[4]	167.3-171.6 sec	8.0 KBytes	14.7 Kbits/sec
[4]	171.6-176.0 sec	8.0 KBytes	14.6 Kbits/sec
[4]	176.0-180.4 sec	8.0 KBytes	14.6 Kbits/sec
[4]	180.4-189.1 sec	16.0 KBytes	14.6 Kbits/sec
[4]	189.1-193.5 sec	8.0 KBytes	14.7 Kbits/sec
[4]	193.5-197.9 sec	8.0 KBytes	14.6 Kbits/sec
[4]	197.9-202.3 sec	8.0 KBytes	14.7 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	202.3-206.6 sec	8.0 KBytes	14.6 Kbits/sec
[4]	206.6-211.0 sec	8.0 KBytes	14.6 Kbits/sec
[4]	211.0-215.4 sec	8.0 KBytes	14.7 Kbits/sec
[4]	215.4-224.1 sec	16.0 KBytes	14.6 Kbits/sec
[4]	224.1-228.5 sec	8.0 KBytes	14.6 Kbits/sec
[4]	228.5-232.9 sec	8.0 KBytes	14.6 Kbits/sec
[4]	232.9-237.2 sec	8.0 KBytes	14.7 Kbits/sec
[4]	237.2-241.6 sec	8.0 KBytes	14.7 Kbits/sec
[4]	0.0-249.5 sec	456 KBytes	14.6 Kbits/sec

Script ended - Wed Feb 5 10:32:35 EST 2003

[52] [mobile-gw] >exit

exit

script done on Wed Feb 05 10:32:56 2003

feb_05_mob_vhf_vhf_rx

Script started on Wed Feb 05 11:07:36 2003

[51] [mobile-gw] >./mob_vhf_recv

Mobile station - VHF Receive

Script started - Wed Feb 5 11:07:41 EST 2003

TTCP PERFORMANCE

Mode ----- TCP - Receive
Packet Size ----- 8192 bytes
Number of Packets ----- 2048
REAL Buffer Size ----- 8760 bytes
Connection from ----- 139.88.20.33 (aatt-temp2)
Throughput ----- 0.01 (Mbits/sec)

Elapsed time: 221.77 seconds CPU usage: 0%
Received: 300 pkts

Server listening on TCP port 5001
TCP window size: 8.0 KByte (default)

[4] local 139.88.12.31 port 5001 connected with 139.88.20.33 port 32811

[ID]	Interval	Transfer	Bandwidth
[4]	0.0- 5.3 sec	9.4 KBytes	14.4 Kbits/sec
[4]	5.3-10.4 sec	9.4 KBytes	14.7 Kbits/sec
[4]	10.4-15.5 sec	9.4 KBytes	14.8 Kbits/sec
[4]	15.5-20.6 sec	9.4 KBytes	14.7 Kbits/sec
[4]	20.6-25.8 sec	9.4 KBytes	14.7 Kbits/sec
[4]	25.8-30.1 sec	8.0 KBytes	14.7 Kbits/sec
[4]	30.1-35.7 sec	10.3 KBytes	14.8 Kbits/sec
[4]	35.7-40.0 sec	8.0 KBytes	14.7 Kbits/sec
[4]	40.0-45.2 sec	9.4 KBytes	14.7 Kbits/sec
[4]	45.2-50.3 sec	9.4 KBytes	14.7 Kbits/sec
[4]	50.3-55.4 sec	9.4 KBytes	14.8 Kbits/sec
[4]	55.4-60.5 sec	9.4 KBytes	14.8 Kbits/sec
[4]	60.5-65.3 sec	8.9 KBytes	14.8 Kbits/sec
[4]	65.3-70.5 sec	9.4 KBytes	14.6 Kbits/sec
[4]	70.5-75.6 sec	9.4 KBytes	14.8 Kbits/sec
[4]	75.6-80.7 sec	9.4 KBytes	14.8 Kbits/sec
[4]	80.7-85.0 sec	8.0 KBytes	14.7 Kbits/sec
[4]	85.0-90.2 sec	9.4 KBytes	14.6 Kbits/sec
[4]	90.2-95.3 sec	9.4 KBytes	14.8 Kbits/sec
[4]	95.3-100.1 sec	8.9 KBytes	14.8 Kbits/sec

[ID]	Interval	Transfer	Bandwidth
[4]	100.1-105.2 sec	9.4 KBytes	14.7 Kbits/sec
[4]	105.2-110.4 sec	9.4 KBytes	14.7 Kbits/sec
[4]	110.4-115.5 sec	9.4 KBytes	14.7 Kbits/sec
[4]	115.5-120.6 sec	9.4 KBytes	14.7 Kbits/sec
[4]	120.6-125.7 sec	9.4 KBytes	14.8 Kbits/sec
[4]	125.7-130.1 sec	8.0 KBytes	14.7 Kbits/sec
[4]	130.1-135.7 sec	10.3 KBytes	14.7 Kbits/sec
[4]	135.7-140.1 sec	8.0 KBytes	14.7 Kbits/sec
[4]	140.1-145.2 sec	9.4 KBytes	14.7 Kbits/sec
[4]	145.2-150.3 sec	9.4 KBytes	14.8 Kbits/sec
[4]	150.3-155.4 sec	9.4 KBytes	14.6 Kbits/sec
[4]	155.4-160.5 sec	9.4 KBytes	14.8 Kbits/sec
[4]	160.5-165.3 sec	8.9 KBytes	14.8 Kbits/sec
[4]	165.3-170.5 sec	9.4 KBytes	14.7 Kbits/sec
[4]	170.5-175.6 sec	9.4 KBytes	14.7 Kbits/sec
[4]	175.6-180.7 sec	9.4 KBytes	14.7 Kbits/sec
[4]	180.7-185.1 sec	8.0 KBytes	14.7 Kbits/sec
[4]	185.1-190.2 sec	9.4 KBytes	14.8 Kbits/sec
[4]	190.2-195.3 sec	9.4 KBytes	14.8 Kbits/sec
[4]	195.3-200.1 sec	8.9 KBytes	14.7 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	200.1-205.3 sec	9.4 KBytes	14.7 Kbits/sec
[4]	205.3-210.4 sec	9.4 KBytes	14.7 Kbits/sec
[4]	210.4-215.5 sec	9.4 KBytes	14.7 Kbits/sec
[4]	215.5-220.6 sec	9.4 KBytes	14.7 Kbits/sec
[4]	220.6-225.8 sec	9.4 KBytes	14.7 Kbits/sec
[4]	225.8-230.1 sec	8.0 KBytes	14.7 Kbits/sec
[4]	230.1-235.7 sec	10.3 KBytes	14.7 Kbits/sec
[4]	235.7-240.0 sec	8.0 KBytes	14.7 Kbits/sec
[4]	240.0-245.2 sec	9.4 KBytes	14.7 Kbits/sec
[4]	0.0-247.9 sec	456 KBytes	14.7 Kbits/sec

^C

Script ended - Wed Feb 5 11:17:40 EST 2003

[52] [mobile-gw] >exit
exit

script done on Wed Feb 05 11:17:41 2003

feb_05_mob_vhf_vhf_tx

Script started on Wed Feb 05 11:18:01 2003
[51] [mobile-gw] >./mob_vhf_send aatt-temp2

Mobile station - VHF Transmit

Script started - Wed Feb 5 11:18:08 EST 2003

Starting Pings

PING aatt-temp2: 56 data bytes

64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=132. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=131. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=131. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=131. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=131. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=131. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=131. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=131. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=131. ms
64 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=131. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss
round-trip (ms) min/avg/max = 131/131/132

PING aatt-temp2: 504 data bytes

512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=607. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=606. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=607. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=606. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=606. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=607. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=607. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=607. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=607. ms
512 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=606. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss
round-trip (ms) min/avg/max = 606/606/607

PING aatt-temp2: 1016 data bytes

1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=1151. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=1151. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=1218. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=1284. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=1151. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=1152. ms

1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=1152. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=1151. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=1151. ms
1024 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=1152. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 1151/1171/1284

PING aatt-temp2: 1392 data bytes

1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=1552. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=1553. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=1552. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=1552. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=1551. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=1552. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=1552. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=1551. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=1552. ms
1400 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=1553. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 1551/1552/1553

PING aatt-temp2: 1442 data bytes

1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=1606. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=1607. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=1608. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=1607. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=1607. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=1606. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=1606. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=1607. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=1606. ms
1450 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=1607. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 1606/1606/1608

PING aatt-temp2: 2040 data bytes

2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=2266. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=2380. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=2492. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=2604. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=2716. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=2828. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=2940. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=7. time=3052. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=8. time=3164. ms
2048 bytes from aatt-temp2 (139.88.20.33): icmp_seq=9. time=3276. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 10 packets received, 0% packet loss

round-trip (ms) min/avg/max = 2266/2771/3276

PING aatt-temp2: 4088 data bytes

4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=0. time=4485. ms

4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=1. time=5872. ms

4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=2. time=7083. ms

4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=3. time=8294. ms

4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=4. time=9505. ms

4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=5. time=10716. ms

4096 bytes from aatt-temp2 (139.88.20.33): icmp_seq=6. time=11926. ms

----aatt-temp2 PING Statistics----

10 packets transmitted, 7 packets received, 30% packet loss

round-trip (ms) min/avg/max = 4485/8268/11926

Starting TTCP

TTCP PERFORMANCE

Mode ----- TCP - Transmit

Packet Size ----- 8192 bytes

Number of Packets ----- 50

REAL Buffer Size ----- 8192 bytes

Connection made to ----- 139.88.20.33 (aatt-temp2)

Throughput 0.01 (Mbits/sec)

Elapsed time: 214.41 seconds CPU usage: 0%

Xmit: 0.23 pkts/sec

Sleeping for 15 seconds

Starting IPerf

Client connecting to aatt-temp2, TCP port 5001

TCP window size: 8.0 KByte (default)

[4] local 139.88.12.31 port 32811 connected with 139.88.20.33 port 5001

[ID]	Interval	Transfer	Bandwidth
-------	----------	----------	-----------

[4]	0.0- 5.3 sec	24.0 KBytes	36.3 Kbits/sec
------	--------------	-------------	----------------

[4]	5.3-13.9 sec	16.0 KBytes	14.8 Kbits/sec
------	--------------	-------------	----------------

[4]	13.9-18.2 sec	8.0 KBytes	14.8 Kbits/sec
------	---------------	------------	----------------

[4]	18.2-22.6 sec	8.0 KBytes	14.8 Kbits/sec
------	---------------	------------	----------------

[4]	22.6-26.9 sec	8.0 KBytes	14.8 Kbits/sec
------	---------------	------------	----------------

[4]	26.9-31.2 sec	8.0 KBytes	14.9 Kbits/sec
------	---------------	------------	----------------

[4]	31.2-35.5 sec	8.0 KBytes	14.8 Kbits/sec
[4]	35.5-44.1 sec	16.0 KBytes	14.8 Kbits/sec
[4]	44.1-48.5 sec	8.0 KBytes	14.8 Kbits/sec
[4]	48.5-52.8 sec	8.0 KBytes	14.8 Kbits/sec
[4]	52.8-57.1 sec	8.0 KBytes	14.8 Kbits/sec
[4]	57.1-61.4 sec	8.0 KBytes	14.9 Kbits/sec
[4]	61.4-65.7 sec	8.0 KBytes	14.8 Kbits/sec
[4]	65.7-70.0 sec	8.0 KBytes	14.9 Kbits/sec
[4]	70.0-78.7 sec	16.0 KBytes	14.8 Kbits/sec
[4]	78.7-83.0 sec	8.0 KBytes	14.8 Kbits/sec
[4]	83.0-87.3 sec	8.0 KBytes	14.8 Kbits/sec
[4]	87.3-91.6 sec	8.0 KBytes	14.8 Kbits/sec
[4]	91.6-95.9 sec	8.0 KBytes	14.9 Kbits/sec
[4]	95.9-100.2 sec	8.0 KBytes	14.8 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	100.2-108.9 sec	16.0 KBytes	14.8 Kbits/sec
[4]	108.9-113.2 sec	8.0 KBytes	14.7 Kbits/sec
[4]	113.2-117.5 sec	8.0 KBytes	14.8 Kbits/sec
[4]	117.5-121.8 sec	8.0 KBytes	14.8 Kbits/sec
[4]	121.8-126.1 sec	8.0 KBytes	14.9 Kbits/sec
[4]	126.1-130.4 sec	8.0 KBytes	14.8 Kbits/sec
[4]	130.4-139.1 sec	16.0 KBytes	14.8 Kbits/sec
[4]	139.1-143.4 sec	8.0 KBytes	14.8 Kbits/sec
[4]	143.4-147.7 sec	8.0 KBytes	14.8 Kbits/sec
[4]	147.7-152.0 sec	8.0 KBytes	14.8 Kbits/sec
[4]	152.0-156.4 sec	8.0 KBytes	14.8 Kbits/sec
[4]	156.4-160.7 sec	8.0 KBytes	14.8 Kbits/sec
[4]	160.7-169.3 sec	16.0 KBytes	14.8 Kbits/sec
[4]	169.3-173.6 sec	8.0 KBytes	14.8 Kbits/sec
[4]	173.6-178.0 sec	8.0 KBytes	14.7 Kbits/sec
[4]	178.0-182.3 sec	8.0 KBytes	14.8 Kbits/sec
[4]	182.3-186.6 sec	8.0 KBytes	14.9 Kbits/sec
[4]	186.6-190.9 sec	8.0 KBytes	14.8 Kbits/sec
[4]	190.9-195.2 sec	8.0 KBytes	14.8 Kbits/sec
[4]	195.2-203.9 sec	16.0 KBytes	14.8 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	203.9-208.2 sec	8.0 KBytes	14.8 Kbits/sec
[4]	208.2-212.5 sec	8.0 KBytes	14.8 Kbits/sec
[4]	212.5-216.8 sec	8.0 KBytes	14.9 Kbits/sec
[4]	216.8-221.1 sec	8.0 KBytes	14.8 Kbits/sec
[4]	221.1-225.4 sec	8.0 KBytes	14.8 Kbits/sec
[4]	225.4-234.1 sec	16.0 KBytes	14.8 Kbits/sec
[4]	234.1-238.4 sec	8.0 KBytes	14.8 Kbits/sec
[4]	238.4-242.7 sec	8.0 KBytes	14.8 Kbits/sec
[4]	0.0-250.5 sec	464 KBytes	14.8 Kbits/sec

Script ended - Wed Feb 5 11:27:32 EST 2003

[52] [mobile-gw] >exit

exit

script done on Wed Feb 05 11:27:34 2003

feb_26_mob_vhf_vhf_rx_failover.1

Script started on Wed Feb 26 10:36:21 2003

[54] [mobile-gw] >iperf -w 135000 -i 5 -t 360 -s

Server listening on TCP port 5001

TCP window size: 132 KByte

[4] local 139.88.12.31 port 5001 connected with 139.88.20.33 port 32880

[ID]	Interval	Transfer	Bandwidth
[4]	0.0- 5.6 sec	9.4 KBytes	13.5 Kbits/sec
[4]	5.6-10.1 sec	8.0 KBytes	14.3 Kbits/sec
[4]	10.1-15.4 sec	9.4 KBytes	14.1 Kbits/sec
[4]	15.4-20.8 sec	9.4 KBytes	14.2 Kbits/sec
[4]	20.8-25.3 sec	8.0 KBytes	14.2 Kbits/sec
[4]	25.3-30.6 sec	9.4 KBytes	14.1 Kbits/sec
[4]	30.6-35.1 sec	8.0 KBytes	14.2 Kbits/sec
[4]	35.1-40.1 sec	6.6 KBytes	10.6 Kbits/sec
[4]	40.1-45.5 sec	9.4 KBytes	13.9 Kbits/sec
[4]	45.5-50.8 sec	9.4 KBytes	14.2 Kbits/sec
[4]	50.8-55.3 sec	8.0 KBytes	14.2 Kbits/sec
[4]	55.3-60.3 sec	8.9 KBytes	14.1 Kbits/sec
[4]	60.3-65.6 sec	9.4 KBytes	14.2 Kbits/sec
[4]	65.6-86.2 sec	4.3 KBytes	1.7 Kbits/sec
[4]	86.2-86.8 sec	2.9 KBytes	36.3 Kbits/sec
[4]	86.8-87.3 sec	2.9 KBytes	43.3 Kbits/sec
[4]	87.3-87.4 sec	1.4 KBytes	441 Kbits/sec
[4]	87.4-90.1 sec	69.9 KBytes	205 Kbits/sec
[4]	90.1-95.0 sec	592 KBytes	961 Kbits/sec
[4]	95.0-100.1 sec	660 KBytes	1.0 Mbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	100.1-105.0 sec	697 KBytes	1.1 Mbits/sec
[4]	105.0-110.0 sec	774 KBytes	1.2 Mbits/sec
[4]	110.0-115.0 sec	810 KBytes	1.3 Mbits/sec
[4]	115.0-120.0 sec	878 KBytes	1.4 Mbits/sec
[4]	120.0-125.0 sec	936 KBytes	1.5 Mbits/sec
[4]	125.0-130.0 sec	984 KBytes	1.5 Mbits/sec
[4]	130.0-135.0 sec	1.0 MBytes	1.6 Mbits/sec
[4]	135.0-140.0 sec	1.1 MBytes	1.7 Mbits/sec
[4]	140.0-145.0 sec	1.1 MBytes	1.8 Mbits/sec
[4]	145.0-150.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	150.0-155.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	155.0-160.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	160.0-165.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	165.0-170.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	170.0-175.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	175.0-180.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	180.0-185.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	185.0-190.0 sec	1.2 MBytes	1.9 Mbits/sec

[4]	190.0-195.0	sec	1.2 MBytes	1.9 Mbits/sec
[4]	195.0-200.0	sec	1.2 MBytes	1.9 Mbits/sec
[ID]	Interval		Transfer	Bandwidth
[4]	200.0-205.0	sec	1.2 MBytes	1.9 Mbits/sec
[4]	205.0-210.0	sec	1.2 MBytes	1.9 Mbits/sec
[4]	210.0-215.0	sec	1.2 MBytes	1.9 Mbits/sec
[4]	215.0-220.0	sec	1.2 MBytes	1.9 Mbits/sec
[4]	220.0-225.2	sec	739 KBytes	1.1 Mbits/sec
[4]	225.2-230.5	sec	9.4 KBytes	14.1 Kbits/sec
[4]	230.5-235.0	sec	8.0 KBytes	14.2 Kbits/sec
[4]	235.0-240.0	sec	8.9 KBytes	14.2 Kbits/sec
[4]	240.0-245.4	sec	9.4 KBytes	14.0 Kbits/sec
[4]	245.4-250.7	sec	9.4 KBytes	14.1 Kbits/sec
[4]	250.7-255.2	sec	8.0 KBytes	14.3 Kbits/sec
[4]	255.2-260.6	sec	9.4 KBytes	14.1 Kbits/sec
[4]	260.6-265.1	sec	8.0 KBytes	14.3 Kbits/sec
[4]	265.1-270.5	sec	9.4 KBytes	13.9 Kbits/sec
[4]	270.5-310.8	sec	2.5 KBytes	515 bits/sec
[4]	310.8-311.5	sec	1.4 KBytes	14.9 Kbits/sec
[4]	311.5-312.0	sec	892 Bytes	14.3 Kbits/sec
[4]	312.0-312.8	sec	1.4 KBytes	14.9 Kbits/sec
[4]	312.8-313.6	sec	1.4 KBytes	14.9 Kbits/sec
[4]	313.6-314.3	sec	1.4 KBytes	14.9 Kbits/sec
[ID]	Interval		Transfer	Bandwidth
[4]	314.3-315.1	sec	1.4 KBytes	14.9 Kbits/sec
[4]	315.1-315.9	sec	1.4 KBytes	14.9 Kbits/sec
[4]	315.9-316.3	sec	892 Bytes	14.8 Kbits/sec
[4]	316.3-331.6	sec	9.4 KBytes	4.9 Kbits/sec
[4]	331.6-333.1	sec	568 Bytes	2.9 Kbits/sec
[4]	333.1-333.9	sec	1.4 KBytes	14.6 Kbits/sec
[4]	333.9-335.4	sec	2.9 KBytes	14.9 Kbits/sec
[4]	335.4-340.1	sec	8.6 KBytes	14.9 Kbits/sec
[4]	340.1-345.4	sec	10.0 KBytes	14.9 Kbits/sec
[4]	345.4-350.3	sec	8.9 KBytes	14.8 Kbits/sec
[4]	350.3-355.4	sec	9.4 KBytes	14.8 Kbits/sec
[4]	355.4-360.4	sec	9.4 KBytes	14.8 Kbits/sec
[4]	360.4-365.2	sec	8.9 KBytes	14.9 Kbits/sec
[4]	365.2-370.3	sec	9.4 KBytes	14.8 Kbits/sec
[4]	370.3-375.3	sec	9.4 KBytes	14.9 Kbits/sec
[4]	375.3-380.4	sec	9.4 KBytes	14.8 Kbits/sec
[4]	380.4-385.6	sec	8.0 KBytes	12.4 Kbits/sec
[4]	385.6-390.7	sec	9.4 KBytes	14.8 Kbits/sec
[4]	390.7-395.7	sec	9.4 KBytes	14.9 Kbits/sec
[4]	395.7-400.1	sec	8.0 KBytes	14.7 Kbits/sec
[ID]	Interval		Transfer	Bandwidth
[4]	400.1-405.6	sec	10.3 KBytes	14.9 Kbits/sec
[4]	405.6-410.8	sec	9.4 KBytes	14.7 Kbits/sec
[4]	410.8-415.1	sec	8.0 KBytes	14.8 Kbits/sec
[4]	0.0-417.8	sec	28.5 MBytes	559 Kbits/sec

^C

[55] [mobile-gw] >exit

exit

script done on Wed Feb 26 10:44:12 2003

feb_26_mob_sat_sat_rx_failover.2

Script started on Wed Feb 26 10:46:49 2003

[51] [mobile-gw] >iperf -w 135000 -i 5 -t 360 -s

Server listening on TCP port 5001

TCP window size: 132 KByte

[4] local 139.88.12.31 port 5001 connected with 139.88.20.33 port 32903

[ID]	Interval	Transfer	Bandwidth
[4]	0.0- 5.0 sec	318 KBytes	508 Kbits/sec
[4]	5.0-10.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	10.0-15.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	15.0-20.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	20.0-25.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	25.0-30.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	30.0-35.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	35.0-40.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	40.0-45.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	45.0-50.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	50.0-55.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	55.0-60.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	60.0-65.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	65.0-70.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	70.0-75.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	75.0-80.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	80.0-85.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	85.0-90.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	90.0-95.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	95.0-100.0 sec	1.2 MBytes	1.9 Mbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	100.0-105.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	105.0-110.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	110.0-115.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	115.0-120.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	120.0-125.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	125.0-130.5 sec	531 KBytes	776 Kbits/sec
[4]	130.5-135.5 sec	9.4 KBytes	14.9 Kbits/sec
[4]	135.5-140.3 sec	8.9 KBytes	14.9 Kbits/sec
[4]	140.3-145.4 sec	9.4 KBytes	14.8 Kbits/sec
[4]	145.4-150.5 sec	9.4 KBytes	14.8 Kbits/sec
[4]	150.5-155.6 sec	9.4 KBytes	14.9 Kbits/sec
[4]	155.6-199.5 sec	9.1 KBytes	1.7 Kbits/sec
[4]	199.5-200.2 sec	1.4 KBytes	14.9 Kbits/sec
[4]	200.2-201.0 sec	1.4 KBytes	14.9 Kbits/sec
[4]	201.0-201.5 sec	892 Bytes	14.9 Kbits/sec
[4]	201.5-206.6 sec	892 Bytes	1.4 Kbits/sec
[4]	206.6-207.3 sec	1.4 KBytes	14.9 Kbits/sec
[4]	207.3-208.1 sec	1.4 KBytes	14.9 Kbits/sec

[4]	208.1-213.2 sec	568 Bytes	892 bits/sec
[4]	213.2-213.7 sec	892 Bytes	14.8 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	213.7-214.4 sec	1.4 KBytes	14.8 Kbits/sec
[4]	214.4-215.2 sec	1.4 KBytes	14.7 Kbits/sec
[4]	215.2-216.0 sec	1.4 KBytes	14.7 Kbits/sec
[4]	216.0-220.1 sec	7.7 KBytes	14.9 Kbits/sec
[4]	220.1-225.2 sec	16.6 KBytes	26.1 Kbits/sec
[4]	225.2-230.9 sec	18.9 KBytes	26.7 Kbits/sec
[4]	230.9-235.5 sec	8.6 KBytes	14.9 Kbits/sec
[4]	235.5-240.3 sec	8.9 KBytes	14.7 Kbits/sec
[4]	240.3-245.1 sec	8.9 KBytes	14.9 Kbits/sec
[4]	245.1-250.1 sec	9.4 KBytes	14.8 Kbits/sec
[4]	250.1-255.2 sec	9.4 KBytes	14.9 Kbits/sec
[4]	255.2-260.3 sec	9.4 KBytes	14.8 Kbits/sec
[4]	260.3-265.4 sec	9.4 KBytes	14.9 Kbits/sec
[4]	265.4-270.5 sec	9.4 KBytes	14.8 Kbits/sec
[4]	270.5-275.2 sec	8.9 KBytes	14.9 Kbits/sec
[4]	275.2-280.8 sec	9.4 KBytes	13.4 Kbits/sec
[4]	280.8-285.4 sec	8.0 KBytes	14.0 Kbits/sec
[4]	285.4-290.5 sec	9.4 KBytes	14.9 Kbits/sec
[4]	290.5-295.5 sec	9.4 KBytes	14.9 Kbits/sec
[4]	295.5-300.6 sec	9.4 KBytes	14.9 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	300.6-305.7 sec	9.4 KBytes	14.8 Kbits/sec
[4]	305.7-337.1 sec	2.3 KBytes	599 bits/sec
[4]	337.1-337.8 sec	2.9 KBytes	36.3 Kbits/sec
[4]	337.8-338.3 sec	2.9 KBytes	43.3 Kbits/sec
[4]	338.3-338.3 sec	1.4 KBytes	445 Kbits/sec
[4]	338.3-338.8 sec	2.9 KBytes	45.5 Kbits/sec
[4]	338.8-338.8 sec	1.4 KBytes	605 Kbits/sec
[4]	338.8-340.1 sec	11.2 KBytes	71.0 Kbits/sec
[4]	340.1-345.2 sec	84.3 KBytes	131 Kbits/sec
[4]	345.2-350.1 sec	129 KBytes	213 Kbits/sec
[4]	350.1-355.1 sec	186 KBytes	295 Kbits/sec
[4]	355.1-360.0 sec	233 KBytes	383 Kbits/sec
[4]	0.0-362.2 sec	30.6 MBytes	693 Kbits/sec

feb_26_mob_sat_sat_rx_failover.3

[52] [mobile-gw] >iperf -w 135000 -i 5 -t 360 -s

Server listening on TCP port 5001

TCP window size: 132 KByte

[4] local 139.88.12.31 port 5001 connected with 139.88.20.33 port 32904

[ID]	Interval	Transfer	Bandwidth
[4]	0.0- 5.0 sec	315 KBytes	503 Kbits/sec
[4]	5.0-10.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	10.0-15.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	15.0-20.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	20.0-25.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	25.0-30.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	30.0-35.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	35.0-40.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	40.0-45.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	45.0-50.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	50.0-55.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	55.0-60.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	60.0-65.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	65.0-70.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	70.0-75.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	75.0-80.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	80.0-85.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	85.0-90.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	90.0-95.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	95.0-100.2 sec	388 KBytes	597 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	100.2-105.8 sec	10.3 KBytes	14.9 Kbits/sec
[4]	105.8-110.1 sec	8.0 KBytes	14.8 Kbits/sec
[4]	110.1-115.1 sec	9.4 KBytes	14.9 Kbits/sec
[4]	115.1-120.2 sec	9.4 KBytes	14.8 Kbits/sec
[4]	120.2-125.3 sec	9.4 KBytes	14.9 Kbits/sec
[4]	125.3-130.4 sec	9.4 KBytes	14.8 Kbits/sec
[4]	130.4-135.1 sec	8.9 KBytes	14.9 Kbits/sec
[4]	135.1-180.7 sec	2.9 KBytes	512 bits/sec
[4]	180.7-181.5 sec	1.4 KBytes	14.6 Kbits/sec
[4]	181.5-185.8 sec	5.1 KBytes	9.5 Kbits/sec
[4]	185.8-188.1 sec	1.4 KBytes	4.9 Kbits/sec
[4]	188.1-188.9 sec	1.4 KBytes	14.5 Kbits/sec
[4]	188.9-189.7 sec	1.4 KBytes	15.3 Kbits/sec
[4]	189.7-190.4 sec	1.4 KBytes	14.9 Kbits/sec
[4]	190.4-190.9 sec	892 Bytes	14.9 Kbits/sec
[4]	190.9-191.7 sec	1.4 KBytes	14.5 Kbits/sec
[4]	191.7-192.5 sec	1.4 KBytes	15.0 Kbits/sec
[4]	192.5-193.2 sec	1.4 KBytes	14.8 Kbits/sec
[4]	193.2-195.2 sec	3.7 KBytes	15.0 Kbits/sec

[4]	195.2-200.3 sec	9.4 KBytes	14.8 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	200.3-205.4 sec	9.4 KBytes	14.9 Kbits/sec
[4]	205.4-210.5 sec	9.4 KBytes	14.8 Kbits/sec
[4]	210.5-215.3 sec	8.0 KBytes	13.3 Kbits/sec
[4]	215.3-242.3 sec	9.4 KBytes	2.8 Kbits/sec
[4]	242.3-242.9 sec	2.9 KBytes	36.3 Kbits/sec
[4]	242.9-243.4 sec	2.9 KBytes	43.3 Kbits/sec
[4]	243.4-243.5 sec	1.4 KBytes	442 Kbits/sec
[4]	243.5-244.0 sec	2.9 KBytes	45.5 Kbits/sec
[4]	244.0-245.0 sec	8.3 KBytes	63.3 Kbits/sec
[4]	245.0-250.1 sec	68.3 KBytes	108 Kbits/sec
[4]	250.1-255.0 sec	116 KBytes	188 Kbits/sec
[4]	255.0-260.2 sec	176 KBytes	272 Kbits/sec
[4]	260.2-265.0 sec	228 KBytes	378 Kbits/sec
[4]	265.0-270.0 sec	287 KBytes	460 Kbits/sec
[4]	270.0-275.0 sec	328 KBytes	522 Kbits/sec
[4]	275.0-280.0 sec	381 KBytes	609 Kbits/sec
[4]	280.0-285.0 sec	441 KBytes	708 Kbits/sec
[4]	285.0-290.0 sec	489 KBytes	785 Kbits/sec
[4]	290.0-295.0 sec	544 KBytes	871 Kbits/sec
[4]	295.0-300.0 sec	603 KBytes	966 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	300.0-305.0 sec	656 KBytes	1.0 Mbits/sec
[4]	305.0-310.0 sec	708 KBytes	1.1 Mbits/sec
[4]	310.0-315.0 sec	755 KBytes	1.2 Mbits/sec
[4]	315.0-320.0 sec	820 KBytes	1.3 Mbits/sec
[4]	320.0-325.0 sec	870 KBytes	1.4 Mbits/sec
[4]	325.0-330.0 sec	925 KBytes	1.4 Mbits/sec
[4]	330.0-335.0 sec	983 KBytes	1.5 Mbits/sec
[4]	335.0-340.0 sec	1.0 MBytes	1.6 Mbits/sec
[4]	340.0-345.0 sec	1.1 MBytes	1.7 Mbits/sec
[4]	345.0-350.0 sec	1.1 MBytes	1.8 Mbits/sec
[4]	350.0-355.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	355.0-360.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	0.0-360.4 sec	37.2 MBytes	846 Kbits/sec

feb_26_mob_sat_sat_rx_failover.4

[53] [mobile-gw] >iperf -w 135000 -i 5 -t 360 -s

Server listening on TCP port 5001

TCP window size: 132 KByte

[4] local 139.88.12.31 port 5001 connected with 139.88.20.33 port 32905

[ID]	Interval	Transfer	Bandwidth
[4]	0.0- 5.0 sec	312 KBytes	499 Kbits/sec
[4]	5.0-10.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	10.0-15.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	15.0-20.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	20.0-25.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	25.0-30.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	30.0-35.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	35.0-40.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	40.0-45.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	45.0-50.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	50.0-55.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	55.0-60.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	60.0-65.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	65.0-70.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	70.0-75.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	75.0-80.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	80.0-85.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	85.0-90.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	90.0-95.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	95.0-100.0 sec	1.2 MBytes	1.9 Mbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	100.0-105.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	105.0-110.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	110.0-115.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	115.0-120.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	120.0-125.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	125.0-130.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	130.0-135.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	135.0-140.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	140.0-145.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	145.0-150.3 sec	197 KBytes	297 Kbits/sec
[4]	150.3-155.4 sec	9.4 KBytes	14.8 Kbits/sec
[4]	155.4-160.5 sec	9.4 KBytes	14.9 Kbits/sec
[4]	160.5-165.6 sec	9.4 KBytes	14.8 Kbits/sec
[4]	165.6-206.7 sec	9.1 KBytes	1.8 Kbits/sec
[4]	206.7-207.4 sec	1.4 KBytes	17.0 Kbits/sec
[4]	207.4-207.9 sec	892 Bytes	14.9 Kbits/sec
[4]	207.9-208.7 sec	1.4 KBytes	14.6 Kbits/sec
[4]	208.7-209.4 sec	1.4 KBytes	14.8 Kbits/sec
[4]	209.4-210.2 sec	1.4 KBytes	14.8 Kbits/sec

[4]	210.2-211.0 sec	1.4 KBytes	14.8 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	211.0-211.7 sec	1.4 KBytes	14.6 Kbits/sec
[4]	211.7-212.5 sec	1.4 KBytes	14.8 Kbits/sec
[4]	212.5-215.3 sec	5.1 KBytes	14.9 Kbits/sec
[4]	215.3-225.8 sec	568 Bytes	430 bits/sec
[4]	225.8-226.2 sec	892 Bytes	18.5 Kbits/sec
[4]	226.2-230.1 sec	7.1 KBytes	14.8 Kbits/sec
[4]	230.1-235.1 sec	9.2 KBytes	14.7 Kbits/sec
[4]	235.1-240.6 sec	10.3 KBytes	14.9 Kbits/sec
[4]	240.6-245.7 sec	9.4 KBytes	14.9 Kbits/sec
[4]	245.7-250.7 sec	9.4 KBytes	14.8 Kbits/sec
[4]	250.7-255.1 sec	8.0 KBytes	14.8 Kbits/sec
[4]	255.1-260.1 sec	9.4 KBytes	14.8 Kbits/sec
[4]	260.1-265.2 sec	9.4 KBytes	14.8 Kbits/sec
[4]	265.2-270.8 sec	10.3 KBytes	14.9 Kbits/sec
[4]	270.8-275.1 sec	8.0 KBytes	14.9 Kbits/sec
[4]	275.1-280.2 sec	9.4 KBytes	14.8 Kbits/sec
[4]	280.2-285.2 sec	9.4 KBytes	14.9 Kbits/sec
[4]	285.2-290.3 sec	9.4 KBytes	14.9 Kbits/sec
[4]	290.3-295.2 sec	8.0 KBytes	13.2 Kbits/sec
[4]	295.2-300.3 sec	9.4 KBytes	14.8 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	300.3-305.0 sec	8.9 KBytes	14.9 Kbits/sec
[4]	305.0-310.1 sec	9.4 KBytes	14.8 Kbits/sec
[4]	310.1-315.2 sec	9.4 KBytes	14.9 Kbits/sec
[4]	315.2-320.3 sec	9.4 KBytes	14.9 Kbits/sec
[4]	320.3-325.4 sec	9.4 KBytes	14.8 Kbits/sec
[4]	325.4-330.4 sec	9.4 KBytes	14.9 Kbits/sec
[4]	330.4-335.2 sec	8.9 KBytes	14.9 Kbits/sec
[4]	335.2-340.3 sec	9.4 KBytes	14.8 Kbits/sec
[4]	340.3-345.4 sec	9.4 KBytes	14.8 Kbits/sec
[4]	345.4-350.4 sec	9.4 KBytes	14.8 Kbits/sec
[4]	350.4-355.5 sec	9.4 KBytes	14.9 Kbits/sec
[4]	355.5-360.6 sec	9.4 KBytes	14.9 Kbits/sec
[4]	360.6-365.4 sec	8.0 KBytes	13.3 Kbits/sec
[4]	365.4-414.4 sec	3.7 KBytes	623 bits/sec
[4]	414.4-415.0 sec	2.9 KBytes	36.3 Kbits/sec
[4]	415.0-415.5 sec	2.9 KBytes	43.3 Kbits/sec
[4]	415.5-415.6 sec	1.4 KBytes	445 Kbits/sec
[4]	415.6-416.1 sec	2.9 KBytes	45.5 Kbits/sec
[4]	416.1-416.1 sec	1.4 KBytes	600 Kbits/sec
[4]	416.1-416.2 sec	2.9 KBytes	214 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	416.2-416.6 sec	2.9 KBytes	56.9 Kbits/sec
[4]	416.6-416.6 sec	1.4 KBytes	508 Kbits/sec
[4]	416.6-416.7 sec	2.9 KBytes	235 Kbits/sec
[4]	416.7-420.0 sec	57.2 KBytes	139 Kbits/sec
[4]	420.0-425.1 sec	127 KBytes	199 Kbits/sec

[4]	425.1-430.1 sec	183 KBytes	292 Kbits/sec
[4]	430.1-435.1 sec	239 KBytes	384 Kbits/sec
[4]	435.1-440.0 sec	285 KBytes	464 Kbits/sec
[4]	440.0-445.0 sec	335 KBytes	536 Kbits/sec
[4]	445.0-450.0 sec	391 KBytes	623 Kbits/sec
[4]	450.0-455.1 sec	451 KBytes	716 Kbits/sec
[4]	455.1-460.1 sec	500 KBytes	800 Kbits/sec
[4]	460.1-465.0 sec	551 KBytes	890 Kbits/sec
[4]	465.0-470.0 sec	613 KBytes	983 Kbits/sec
[4]	470.0-475.0 sec	659 KBytes	1.0 Mbits/sec
[4]	475.0-480.0 sec	714 KBytes	1.1 Mbits/sec
[4]	480.0-485.0 sec	763 KBytes	1.2 Mbits/sec
[4]	485.0-490.0 sec	829 KBytes	1.3 Mbits/sec
[4]	490.0-495.0 sec	875 KBytes	1.4 Mbits/sec
[4]	495.0-500.0 sec	936 KBytes	1.5 Mbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	500.0-505.0 sec	995 KBytes	1.6 Mbits/sec
[4]	505.0-510.0 sec	1.0 MBytes	1.6 Mbits/sec
[4]	510.0-515.0 sec	1.1 MBytes	1.7 Mbits/sec
[4]	515.0-520.0 sec	1.1 MBytes	1.8 Mbits/sec
[4]	520.0-525.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	525.0-530.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	530.0-535.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	535.0-540.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	540.0-545.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	545.0-550.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	550.0-555.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	555.0-560.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	560.0-565.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	565.0-570.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	570.0-575.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	575.0-580.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	580.0-585.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	585.0-590.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	590.0-595.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	595.0-600.0 sec	1.2 MBytes	1.9 Mbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	600.0-605.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	605.0-610.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	610.0-615.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	615.0-620.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	620.0-625.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	625.0-630.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	630.0-635.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	635.0-640.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	640.0-645.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	645.0-650.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	650.0-655.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	655.0-660.0 sec	1.2 MBytes	1.9 Mbits/sec

[4]	660.0-665.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	665.0-670.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	670.0-675.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	675.0-680.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	680.0-685.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	685.0-690.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	690.0-695.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	695.0-700.0 sec	1.2 MBytes	1.9 Mbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	700.0-705.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	705.0-710.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	710.0-715.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	715.0-720.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	0.0-720.2 sec	94.9 MBytes	1.1 Mbits/sec

feb_26_mob_sat_sat_rx_failover.5

[54] [mobile-gw] >iperf -w 135000 -i 5 -s

Server listening on TCP port 5001

TCP window size: 132 KByte

[4] local 139.88.12.31 port 5001 connected with 139.88.20.33 port 32906

[ID]	Interval	Transfer	Bandwidth
[4]	0.0- 5.0 sec	318 KBytes	508 Kbits/sec
[4]	5.0-10.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	10.0-15.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	15.0-20.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	20.0-25.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	25.0-30.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	30.0-35.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	35.0-40.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	40.0-45.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	45.0-50.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	50.0-55.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	55.0-60.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	60.0-65.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	65.0-70.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	70.0-75.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	75.0-80.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	80.0-85.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	85.0-90.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	90.0-95.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	95.0-100.0 sec	1.2 MBytes	1.9 Mbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	100.0-105.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	105.0-110.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	110.0-115.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	115.0-120.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	120.0-125.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	125.0-130.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	130.0-135.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	135.0-140.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	140.0-145.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	145.0-150.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	150.0-155.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	155.0-160.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	160.0-165.7 sec	952 KBytes	1.3 Mbits/sec
[4]	165.7-170.7 sec	9.4 KBytes	14.9 Kbits/sec
[4]	170.7-175.0 sec	8.0 KBytes	14.8 Kbits/sec
[4]	175.0-180.1 sec	9.4 KBytes	14.9 Kbits/sec
[4]	180.1-185.2 sec	9.4 KBytes	14.9 Kbits/sec
[4]	185.2-190.8 sec	10.3 KBytes	14.8 Kbits/sec
[4]	190.8-195.1 sec	8.0 KBytes	14.8 Kbits/sec

[4]	195.1-200.1 sec	9.4 KBytes	14.9 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	200.1-246.4 sec	4.3 KBytes	758 bits/sec
[4]	246.4-246.8 sec	892 Bytes	14.9 Kbits/sec
[4]	246.8-251.5 sec	568 Bytes	983 bits/sec
[4]	251.5-252.2 sec	6.6 KBytes	68.6 Kbits/sec
[4]	252.2-254.3 sec	892 Bytes	3.4 Kbits/sec
[4]	254.3-255.0 sec	1.4 KBytes	14.8 Kbits/sec
[4]	255.0-255.8 sec	1.4 KBytes	14.6 Kbits/sec
[4]	255.8-256.6 sec	1.4 KBytes	15.1 Kbits/sec
[4]	256.6-257.3 sec	1.4 KBytes	14.5 Kbits/sec
[4]	257.3-258.1 sec	1.4 KBytes	15.3 Kbits/sec
[4]	258.1-258.6 sec	892 Bytes	14.8 Kbits/sec
[4]	258.6-260.1 sec	2.9 KBytes	14.7 Kbits/sec
[4]	260.1-265.2 sec	9.4 KBytes	14.9 Kbits/sec
[4]	265.2-270.8 sec	9.4 KBytes	13.4 Kbits/sec
[4]	270.8-275.1 sec	8.0 KBytes	14.8 Kbits/sec
[4]	275.1-280.2 sec	9.4 KBytes	14.8 Kbits/sec
[4]	280.2-285.8 sec	10.3 KBytes	14.9 Kbits/sec
[4]	285.8-290.1 sec	8.0 KBytes	14.9 Kbits/sec
[4]	290.1-295.1 sec	9.4 KBytes	14.9 Kbits/sec
[4]	295.1-300.2 sec	9.4 KBytes	14.8 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	300.2-305.3 sec	9.4 KBytes	14.9 Kbits/sec
[4]	305.3-310.4 sec	9.4 KBytes	14.9 Kbits/sec
[4]	310.4-315.1 sec	8.9 KBytes	14.9 Kbits/sec
[4]	315.1-320.2 sec	9.4 KBytes	14.8 Kbits/sec
[4]	320.2-325.3 sec	9.4 KBytes	14.9 Kbits/sec
[4]	325.3-330.4 sec	9.4 KBytes	14.9 Kbits/sec
[4]	330.4-335.5 sec	9.4 KBytes	14.9 Kbits/sec
[4]	335.5-340.3 sec	8.0 KBytes	13.3 Kbits/sec
[4]	340.3-345.4 sec	9.4 KBytes	14.8 Kbits/sec
[4]	345.4-350.1 sec	8.9 KBytes	14.9 Kbits/sec
[4]	350.1-355.2 sec	9.4 KBytes	14.8 Kbits/sec
[4]	355.2-360.3 sec	9.4 KBytes	14.9 Kbits/sec
[4]	360.3-365.4 sec	9.4 KBytes	14.8 Kbits/sec
[4]	365.4-370.5 sec	9.4 KBytes	14.9 Kbits/sec
[4]	370.5-375.5 sec	9.4 KBytes	14.9 Kbits/sec
[4]	375.5-380.3 sec	8.9 KBytes	14.9 Kbits/sec
[4]	380.3-385.4 sec	9.4 KBytes	14.8 Kbits/sec
[4]	385.4-390.5 sec	9.4 KBytes	14.8 Kbits/sec
[4]	390.5-395.5 sec	9.4 KBytes	14.9 Kbits/sec
[4]	395.5-400.6 sec	9.4 KBytes	14.9 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	400.6-405.4 sec	8.0 KBytes	13.4 Kbits/sec
[4]	405.4-410.5 sec	9.4 KBytes	14.8 Kbits/sec
[4]	410.5-415.2 sec	8.9 KBytes	14.9 Kbits/sec
[4]	415.2-420.3 sec	9.4 KBytes	14.8 Kbits/sec
[4]	420.3-425.4 sec	9.4 KBytes	14.9 Kbits/sec

[4]	425.4-471.6 sec	4.3 KBytes	759 bits/sec
[4]	471.6-472.2 sec	2.9 KBytes	36.3 Kbits/sec
[4]	472.2-472.7 sec	2.9 KBytes	43.3 Kbits/sec
[4]	472.7-472.8 sec	1.4 KBytes	443 Kbits/sec
[4]	472.8-473.3 sec	2.9 KBytes	45.6 Kbits/sec
[4]	473.3-473.3 sec	1.4 KBytes	595 Kbits/sec
[4]	473.3-473.4 sec	2.9 KBytes	214 Kbits/sec
[4]	473.4-473.8 sec	2.9 KBytes	56.9 Kbits/sec
[4]	473.8-473.8 sec	1.4 KBytes	505 Kbits/sec
[4]	473.8-475.1 sec	21.5 KBytes	134 Kbits/sec
[4]	475.1-480.1 sec	104 KBytes	167 Kbits/sec
[4]	480.1-485.1 sec	157 KBytes	249 Kbits/sec
[4]	485.1-490.0 sec	209 KBytes	343 Kbits/sec
[4]	490.0-495.0 sec	266 KBytes	426 Kbits/sec
[4]	495.0-500.0 sec	312 KBytes	495 Kbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	500.0-505.0 sec	374 KBytes	602 Kbits/sec
[4]	505.0-510.0 sec	426 KBytes	683 Kbits/sec
[4]	510.0-515.0 sec	478 KBytes	765 Kbits/sec
[4]	515.0-520.0 sec	546 KBytes	866 Kbits/sec
[4]	520.0-525.0 sec	591 KBytes	953 Kbits/sec
[4]	525.0-530.0 sec	652 KBytes	1.0 Mbits/sec
[4]	530.0-535.0 sec	692 KBytes	1.1 Mbits/sec
[4]	535.0-540.0 sec	749 KBytes	1.2 Mbits/sec
[4]	540.0-545.0 sec	815 KBytes	1.3 Mbits/sec
[4]	545.0-550.0 sec	856 KBytes	1.3 Mbits/sec
[4]	550.0-555.0 sec	923 KBytes	1.4 Mbits/sec
[4]	555.0-560.0 sec	970 KBytes	1.5 Mbits/sec
[4]	560.0-565.0 sec	1.0 MBytes	1.6 Mbits/sec
[4]	565.0-570.0 sec	1.1 MBytes	1.7 Mbits/sec
[4]	570.0-575.0 sec	1.1 MBytes	1.8 Mbits/sec
[4]	575.0-580.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	580.0-585.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	585.0-590.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	590.0-595.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	595.0-600.0 sec	1.2 MBytes	1.9 Mbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	600.0-605.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	605.0-610.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	610.0-615.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	615.0-620.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	620.0-625.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	625.0-630.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	630.0-635.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	635.0-640.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	640.0-645.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	645.0-650.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	650.0-655.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	655.0-660.0 sec	1.2 MBytes	1.9 Mbits/sec

[4]	660.0-665.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	665.0-670.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	670.0-675.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	675.0-680.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	680.0-685.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	685.0-690.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	690.0-695.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	695.0-700.0 sec	1.2 MBytes	1.9 Mbits/sec
[ID]	Interval	Transfer	Bandwidth
[4]	700.0-705.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	705.0-710.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	710.0-715.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	715.0-720.0 sec	1.2 MBytes	1.9 Mbits/sec
[4]	0.0-720.5 sec	85.8 MBytes	975 Kbits/sec

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE January 2004		3. REPORT TYPE AND DATES COVERED Technical Memorandum
4. TITLE AND SUBTITLE Failover Switching Tests Between Two RF Communications Links			5. FUNDING NUMBERS WBS-22-727-01-04	
6. AUTHOR(S) David Brooks, Brian Frantz, Doug Hoder, and Ryan Wilkins				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) National Aeronautics and Space Administration John H. Glenn Research Center at Lewis Field Cleveland, Ohio 44135-3191			8. PERFORMING ORGANIZATION REPORT NUMBER E-14392	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) National Aeronautics and Space Administration Washington, DC 20546-0001			10. SPONSORING/MONITORING AGENCY REPORT NUMBER NASA TM-2004-212953	
11. SUPPLEMENTARY NOTES David Brooks and Ryan Wilkins, Infinite Global Infrastructures, West Chicago, Illinois 60185; Brian Frantz, Verizon Federal Network Systems, LLC, Arlington, Virginia 22209-3801; and Doug Hoder, NASA Glenn Research Center. Responsible person, Doug Hoder, organization code 5640, 216-433-3438.				
12a. DISTRIBUTION/AVAILABILITY STATEMENT Unclassified - Unlimited Subject Categories: 04 and 17 Available electronically at http://gltrs.grc.nasa.gov This publication is available from the NASA Center for AeroSpace Information, 301-621-0390.			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) This work presents a short report on the routing tests of the Ku band satcom and VHF line-of-sight communications systems on the Advanced Air Transportation Technologies (AATT) Aero/Mobile van. The first section is a description of the equipment used, followed by descriptions of the tests, the theoretical results, and finally, conclusions and the actual data.				
14. SUBJECT TERMS Aircraft communication; Mobile communication systems; Satellite communication; Phased arrays			15. NUMBER OF PAGES 87	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT	